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MEDICAL MEN AS EXPLORERS.

By LAURENCE DUNCAN,
Melbourne.

Honour to those who go first, even
if those who come after go further.

Arabian proverb.

THE spirit of adventure and discovery has ever activated the best minds of medicine and exploration. The same courage and enterprise which led Patrick Manson and Ronald Ross to study and search out the secrets of malarial infection, Reed, Carroll, Agramonte, Lazear, Stokes and Noguchi to solve the riddle of yellow fever, urged men like Mungo Park and David Livingstone to search out the unknown places of this earth. To all such minds

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DIARY FOR THE MONTH

MEDICAL APPOINTMENTS VACANT, ETC.

MEDICAL APPOINTMENTS: IMPORTANT NOTICE

EDITORIAL NOTICES

the unsolved and the unexplored have always issued a challenge that cannot be neglected.

Medical men have been among the foremost in the exploration of unknown lands. The twentieth century, with its speedy modes of transit, soon left little of this globe unknown. Opportunities for adventure in exploration diminished, but the desire did not decline. If of late the number of medical explorers has lessened, medical science has been the gainer, for it is not improbable that the enterprising minds of many medical men, who in former times would have been explorers, have turned toward medical research. In the field of scientific discovery they have found equally fascinating adventures, and have learned that, as Dean Inge says: "The air that blows round science is like the air on mountain tops, cold and thin, but pure and bracing."

The limits of distant exploration have been reached, but imagination, the divine "spark that

disturbs our clod", is still unlimited and not confined to geographical discovery. As Huxley says, it distinguishes the builders of the Temple of Truth from the hodmen of science. Like the schoolboy who, when his teacher asked the class "What is the greatest canal in the United States?" replied "The alimentary canal", we must exercise our amazement nearer home. And to do so, the medical man need not look elsewhere than to himself, for in the words of that wise old physician Sir Thomas Browne:

We carry with us the wonders we seek without us: there is all Africa and her prodigies in us: we are that bold and adventurous piece of Nature, which he that studies wisely learns in a compendium what others labour at in a divided piece and endless volume.

A consideration of medical men as explorers may aptly begin with a reference to that exceedingly interesting and famous book of travels, "The Voyages of Sir John de Mandeville",¹ published between 1357 and 1371, and now almost indisputably proven to be the work of a physician named Jehan de Bourgogne of Liège. Regarded by Samuel Purchas as "the genuine record of the greatest Asian traveller (after Polo) that ever the world had", it is now known as a masterpiece of parquetry compiled by a stay-at-home physician. A voracious reader of travel narratives, he ingeniously pieced together with his pen descriptions from his reading and his observation, together with some crowning romanticisms from his own fertile imagination, into the prose romance of his own peregrinations in three parts of the world. He was a liar, but he lied so boldly that his travels were accepted as truth, and so captivatingly that his work won an enormous popularity. It spread, it is said, like a plague among all classes. It was soon translated from the French into all European tongues; three English versions were made in the fifteenth century. Of its author little is accurately known. His own account of himself is given in "The Prologue" to his travels. He writes that he was born and bred in England at St. Albans, and had travelled through Turkey, Armenia, Tartary, Persia, Syria, Arabia, Egypt, Libya, Ethiopia, Chaldea, India, Palestine, China and other countries. The greater part of this personal history is probably fictitious. Beazley⁽¹⁾ says that if any section of the book embodies the doctor's own experience, it is that part dealing with Syria and other regions of the eastern Mediterranean, and even here his case is a poor one. It is said that the author on his death-bed revealed to Jean d'Oultremuse, his friend and fellow townsman, that his real name was Mandeville, and that he had to leave England in 1322 owing to having had the misfortune to kill a nobleman. From 1343 until his death in 1372 he practised as a physician at Liège, under the assumed name of Jehan de Bourgogne, otherwise Jehan à la Barbe.

¹In its genesis this famous book has an affinity with a later and less important work published in 1831, the narrative of a shipwreck in the Caribbean Sea, "Sir Edward Seaward's Diary", edited by Miss Jane Porter, daughter of an army surgeon, but believed to have been written by her brother, Dr. William Ogilvie Porter, a naval surgeon who knew the Caribbean; there was no Sir Edward Seaward and there was no shipwreck.

America.

Among those to whom Mandeville's marvellous adventures made a great appeal was one who was destined to discover a new world—Christopher Columbus.¹ The work was introduced to his notice by a priest, Father Antonio, soon became his favourite reading, and to the end of his life he was under its spell. Columbus, indeed, owed much to the medical profession. When he was making little headway with his objective to reach the eastern shores of Asia by a western route, two doctors were at hand with encouragement and aid. It seems, in fact, that even the idea of the great western continent and the way of reaching it were first definitely suggested to Columbus by Paolo Toscanelli, a famous physician and astronomer of Florence. Fernans Martins, doctor of physic and canon of Lisbon, had brought Toscanelli's ideas under the notice of the King of Portugal and his geographers, and at Martins's suggestion Toscanelli had written to the King, discussing his scheme and sending a map, two years before Columbus came to Portugal. Toscanelli's map was earnestly studied by Columbus. In 1480 he wrote to the physician for further information. Toscanelli's reply was that the way to the spice-yielding Indies was shortest by sailing west, and he gave him further counsel, sending him a copy of his map, which was the chart by which Columbus sailed. The other doctor who gave Columbus much practical assistance was Garcia Fernandez, a scholarly physician, learned in navigation, who practised in the village of Palos, in Andalusia. They first met at the monastery of Santa Maria de la Rabida, near Palos, where Columbus, with his little son Diego, worn out by fatigue and suffering, had sought food and shelter. The prior, much interested in his story and the grandeur of his plans, called in his friend Dr. Fernandez, who, after a long discussion with Columbus on geographical and astronomical affairs, soon discovered he was talking not with a candidate for bedlam, but with a dreamer and genius. From that time they were firm friends. With Fernandez Columbus frequently conferred, and from his optimism and advice won further confidence in his plan.

At last, after long years of waiting, Columbus was ready, and on August 3, 1492, the three caravels sailed from Palos. Two surgeons were on board, Maestre Alonzo in the *Santa Maria*, and in the *Carebela Pinta*, Maestre Juan. When Columbus returned to Spain he left behind at the fort of Návidad thirty-nine of his men; Maestre Juan was in medical charge, and with the others he was massacred by the natives at San Domingo. The

¹The discoverers of America were undoubtedly the Norsemen who, about A.D. 986, five hundred years before Columbus landed on Watling Island in the Bahamas, actually lived for several years on the American continent (*vide* "The Norse Discoverers of America", by G. M. Gathorne-Hardy, F.R.G.S.). In 1497 Sebastian Cabot discovered Labrador, and later he explored 1,300 miles of American coast. Cabot was born at Bristol, where the senior collector of customs and possibly a personal friend of Cabot was Richard Ameryk. It has been suggested that the explorer named the new country after this man. In 1499 Amerigo Vespucci, the Italian navigator, explored the American coastline for some hundreds of miles.

senior medical officer of Columbus's second expedition in 1493 was Dr. Diego Alvarez Chanca, of Seville. Of his "zeal and benevolence in everything that related to his profession" Columbus could not speak too highly, and personally he was vastly indebted to the doctor for saving him from the clutches of death by fever.

It is peculiarly interesting to note the magnificent help given by medical men to the discovery which has made the name of Columbus immortal, and the strange mischance that probably the most important gift brought back from the New World by Columbus and his sailors was a human malady¹ which played havoc with Europe after their return—a disease which has given medical men prodigious trouble to investigate and cure. Columbus solved in his lifetime a problem suggested to him by a doctor; he gave the medical profession one which it has taken four centuries to solve. The sailor's gift long went begging even a name. Nobody would own it. The Frenchmen called it *mal de Naples*, the Italians "the French disease". Then some ingenious person proposed that it should be distinguished by the name Amerigo Vespucci (after whom America is named). That virtuous explorer indignantly repudiated the honour. He would have none of it, saying to those who wished so to immortalize him: "If you are determined to give my name to something which I have not discovered, give it to the New World." At length, in 1530, an Italian physician, Fracastoro,² wrote a poem about it, entitled "*Syphilis, sive Morbus Gallicus*", and the disease received the name by which it is now commonly known. But it remained an enigma till 1905, when Schaudinn discovered its cause in the *Treponema pallidum* of syphilis. Five years later, in 1910, Ehrlich introduced the "Salvarsan" treatment. As a climax to this story of America's gift to Europe, let me quote (from Harvey Cushing's "Life of Osler") part of a letter written by Weir Mitchell to Osler. It is said that "Rockefeller, having given Ehrlich for three years ten thousand dollars a year, someone left the German a million marks, upon which he wrote to Rockefeller that he had no longer need of his pension and did not know how best he could reward such generosity, but finally concluded to send him one thousand doses of '606'". Considered in the light of history, there was something particularly felicitous in the choice of gift from Europe's greatest scientist to America's richest man.

The doctors who sailed with Columbus established in the New World for those of their own profession a precedent for discovery which has been worthily followed on sea by such men as Sir John Richardson, Dr. John Rae, Dr. Elisha Kent Kane and others whose work will be mentioned in dealing with Arctic

¹ The traditional theory of the American origin of syphilis is not universally accepted. Apparently there is no valid evidence in its support. There is certain evidence that it raged with particular virulence through Europe soon after the discovery of America, but it seems that it was endemic in Europe long before America's discovery.

² Girolamo Fracastoro (1483-1553), born at Verona, lived the greater part of his life in that city, distinguished as a physician, poet, astronomer and mathematician.

exploration. On land a remarkable number of medical discoverers can be listed; I shall mention only some of the most distinguished.¹ Dr. John Brickell from 1730 onwards explored western Carolina and Tennessee, and in 1750 Dr. Thomas Walker was the first to explore Kentucky. Dr. Edwin James, as surgeon and botanist, accompanied Major Long's expedition in 1820 to the Rocky Mountains, and James's Peak, which he was the first to ascend, is named after him. In 1851 Dr. L. H. Bunnell discovered the famous Yosemite Valley in California. Dr. Ferdinand V. Hayden (1829-1887) over a period of thirty years led United States Government exploring expeditions into the far west. Sir James Hector, M.D., served as naturalist to the Palliser expedition (1857-1860), rendered great services to geography, geology and the allied sciences in North America, and discovered the pass known as Hector's Pass, by which the Canadian Pacific Railway crosses the Rocky Mountains. Dr. Frederick Schwatza in 1879 explored the course of the Yukon River in Alaska. Dr. Robert Bell was scientist of the Hudson Bay (1884-1885) and Baffinland (1897) expeditions, and as director of the Canadian Geological Survey explored vast territories of Canada. In 1906 Dr. Frederick A. Cook, famed in polar explorations, accomplished the ascent for the first time of Mount McKinley in Alaska.

In South America Dr. Philip Gosse accompanied as naturalist the Fitzgerald expedition to the Andes (1896-1897). Over a period of twenty years (between 1901 and 1920), Dr. Alexander Hamilton Rice explored and mapped out rivers and countries; in 1920 he was awarded the Elisha Kent Kane Medal for Exploration. Dr. Thomas W. F. Gann has led numerous expeditions into the wilds of Central America, discovered several ancient Maya cities, and has written some fascinating books on his adventures and discoveries.

Australia.

In 1770 William Brougham Monkhouse,² William Perry and Dr. Solander,³ surgeon, surgeon's mate and naturalist respectively of Captain Cook's ship *Endeavour*, landed on the east coast of Australia; and they were present some months later when Cook, landing on Possession Island in the Torres Straits, took possession of the whole eastern coast of Australia for Great Britain. It is true that they saw only the fringe of a country in the exploration of which others of their profession have played a gallant part.

Of these, one of the most notable and admirable was a naval surgeon, George Bass (1763-1808). Like Damon and Pythias, David and Jonathan, the

¹ In a charming essay (*Medical Record*, October 26, 1918, page 712) Dr. William Browning, of New York, gives the names of some forty-six American medical explorers and adventurers, together with a brief account of their work.

² Surgeon Monkhouse died of fever at Batavia, on the voyage home.

³ Daniel Charles Solander (1736-1782), botanist, graduated in medicine at Upsala. In 1768 he was engaged by Sir Joseph Banks to accompany him on Cook's voyage in the *Endeavour*.

names of Bass and Flinders are indissolubly linked together. They had much in common. Both were born in Lincolnshire. Flinders's father, grandfather and great-grandfather were doctors, and his parents intended him for the same profession; but his desire was for the sea. Bass, the son of a farmer, after serving his apprenticeship to a surgeon, obtained his diploma in London and then settled down to practice in his native country. But being filled with an ardour for adventure, he found the life of a country practitioner not to his liking, and he joined the navy as a surgeon. Both were knightly characters, modest and gallant in according the other the praise, and both were to die in the early forties, the career of each ending in tragedy.

In 1795 Bass, then aged thirty-one, joined the *Reliance* as surgeon, the vessel which brought out to New South Wales its second governor, Captain Hunter. Bass and Midshipman Flinders became firm friends on the voyage and determined to discover the unexplored portion of the eastern coast of Australia. Soon after their arrival at Sydney, in October, 1795, Bass and Flinders, after several trips about Port Jackson, sailed out in the *Tom Thumb* (a tiny boat about eight feet long, which Bass had brought out from England), round the South Head to Botany Bay and explored George's River for twenty miles. In March, 1796, in another boat of nearly the same size, built at Sydney, they sailed further down the south coast, past Botany Bay, entered an uncharted inlet which they named Port Hacking, and explored some forty miles of coast before returning to Sydney. In 1797 Bass was one of the first to attempt exploration by land. He attempted to cross the Blue Mountains. Ascending the highest point, he saw only other ranges of mountains, and was forced to declare them impassable. Later in the same year Bass again explored the south coast for about twenty miles south of Botany Bay, discovering coal at the place now called Coalcliff.

Towards the end of 1797 came Bass's great adventure. Governor Hunter furnished him with a whaleboat 28 feet 7 inches long, with a crew of six British seamen and with provisions for six weeks, "for the purpose of examining the coastline to the southward and as far as could with safety and convenience go". The coastline between Port Jackson and Point Hicks had been surveyed in outline by Captain Cook twenty-eight years before, but south of Point Hicks was quite unknown. So, on Sunday, December 3, 1797, late in the evening, he sailed out through the heads and ploughed his way southward, adding a number of particulars which had escaped Captain Cook. He discovered the Shoalhaven, explored Jervis Bay, discovered Twofold Bay, and at Point Hicks began his exploration of unknown coast. He rounded Cape Howe and discovered Victoria, sailing along the Ninety Mile Beach. He discovered the extreme southern point of Australia, afterwards named Wilson's Promontory; then, coasting north-westward, he came on a very extensive harbour,

which, "from its relative position to every known harbour on the coast", he named Western Port. There he remained thirteen days, made a sketch of the inlet, examined its shores and landed on Phillip Island. Provisions running short, he was forced to turn homeward and, eleven weeks out, reached Sydney after exploring six hundred miles of coast. Bass's voyage¹ of over twelve hundred miles in a leaky whaleboat has been described as the most adventurous on record. He had proved that Van Diemen's Land was not united to Australia, and suggested in very modest words the existence of the strait which now bears his name:

Whenever it shall be decided that the opening between this and Van Diemen's Land is a strait, this rapidity of tide and the long south-west swell that seems to be continually rolling in upon the coast to the westward will then be accounted for.

After his return Bass and Flinders talked it over and, agreeing that there was a strait, determined to sail through it. In October, 1798, they set out in the *Norfolk*, a sloop of 25 tons, with twelve weeks' provisions. They circumnavigated Tasmania, where Bass was the first Englishman to climb Mount Wellington, sailed through Bass Strait and arrived back at Sydney on June 11, 1799. Bass then returned to England and resigned from the navy. In 1802 he returned to Sydney as part owner of a trading ship, the *Venus* (142 tons), with a crew of twenty men, commanded by Charles Bishop. The *Venus* made a voyage to Tahiti, bringing back salt pork to the settlement. Bass then decided to undertake a voyage to Peru with the object of importing the alpaca. Bishop, mentally ill, had to be left behind, and on February 5, 1803, the *Venus*, with Bass in command, sailed from Port Jackson for South America. There Bass's history ends, for from the day of his sailing nothing further was heard of his ship. Some eighteen months later it was asserted that the *Venus* had been captured by the Spaniards and Bass and his crew sent to work in the mines. But no certain evidence has come to light, and the fate of the crew of the *Venus* is almost as great a mystery as that of the brigantine *Marie Celeste*² seventy years later. Another, likewise a graduate of medicine, the poet Keats, wished to have as his epitaph "Here lies one whose name was writ in

¹ Bass's voyage has few parallels in the annals of the sea. Comparable voyages are: (i) Following the mutiny on H.M.S. *Bounty* in the Pacific on April 24, 1789, Captain Bligh and eighteen men, including Ledward, the surgeon, were thrust into a launch 23 feet long (beam 6 feet 9 inches, depth 7 feet 9 inches). They had only scanty provisions, a compass and a quadrant, yet Bligh navigated them safely to Timor, where they arrived on the forty-second day, having sailed 3,620 miles in a boat whose gunwhale was only seven inches above the water. This is the longest voyage ever made by a small boat. (ii) In 1916 Shackleton, with five men and one month's provisions, covered 800 miles of a stormy sea in a whaleboat twenty feet long. (iii) In 1923 the *Trevassas*, 1,640 miles from Fremantle (bound for Durban), foundered and sank in the Indian Ocean. The captain's boat (26 feet long, with a beam of 8 feet 3 inches), with 20 men, and the mate's boat of the same size, with 24 men, both landed, after a journey of 1,556 miles, occupying twenty-two days, on the island of Rodriguez. Number 3 boat, under the first officer, on the twenty-fifth day landed at Mauritius, 1,747 miles.

² On December 5, 1872, the crew of the barque *Dei Gratia* came in mid-Atlantic upon the abandoned *Marie Celeste*, a brigantine of 296 tons. Everything was in order; there seemed nothing missing, except the crew. Why she should have been abandoned remains one of the puzzles of maritime history.

water". That surely is Bass's epitaph, for as long as the tide washes on the Victorian coast, from Point Hicks to Western Port, his name shall shine as a bright particular star in the firmament of fame.

Flinders was fortunate in his doctor comrades; when in 1801 he assumed command of the *Investigator* to complete the navigation of the coasts of Australia, Banks sent with him as botanist Robert Brown, Doctor of Medicine of Edinburgh, termed by Humboldt "botanicorum facile princeps". During the four years that Brown spent studying the then almost unknown flora of Australasia, he fully merited the description Banks gave of him as "a Scotsman fitted to pursue an object with constancy and a cold mind", and brought home about four thousand kinds of plants then almost unknown to botanists. The surgeon of the *Investigator* was Hugh Bell; the assistant surgeon was Robert Purdie. The latter's name was given by Flinders to Purdie's Isles in the Great Australian Bight.

In 1790 there arrived in New South Wales, as surgeon to the notorious New South Wales Corps, a very able man, Dr. Harris, who for many years was a leading figure in the colony. At different times he acted as magistrate, deputy-judge-advocate, naval officer to the port, and in 1818 as a volunteer he accompanied John Oxley's second expedition to the Macquarie River and Liverpool Plains. Dr. Walker was a member of Sir George Grey's expeditions to the north-west of Western Australia (1837-1839). In 1844 Dr. John Harris Browne, an able surgeon and personal friend of Captain Charles Sturt, accompanied Sturt on his expedition of 1844-1845 to the Great Central Desert. They proceeded to Menindie, thence northward to about midway between the Gulf of Carpentaria and Spencer's Gulf, and discovered Eyre and Cooper's Creeks. In 1855 Baron von Mueller, M.D. (honorary), a very distinguished botanist who contributed greatly to our knowledge of the Australian flora, accompanied the first Leichhardt relief expedition as botanist. Herman Becker joined the Bourke and Wills expedition in 1860 as medical officer and naturalist, and died in central Australia. The Honourable Dr. John Mildred Creed was medical officer of the expedition organized by the South Australian Government for the exploration of the Northern Territory in 1867-1868.

In still more recent times Sir Edward Charles Stirling, of Adelaide, accompanied as medical officer and anthropologist W. A. Horn's expedition to central Australia; and Dr. George Ernest Morrison showed the true spirit of the born adventurer. While yet a student, Morrison spent one vacation walking round the coast of Victoria and South Australia; another he passed in a canoe, covering 1,500 miles in sixty-five days. Later came his famous walk across Australia; alone, with no compass or firearms, he carried his swag from Normanton in the north to his home in Geelong, 2,043 miles, in 123 days. His subsequent adventurous career, leading up to his service as *Times*

correspondent at Pekin from 1897 to 1912 and then as political adviser to the Chinese Government, is well known.

New Zealand.

In New Zealand, likewise, the medical profession can take pride to itself for the exploratory work of its members. Much valuable pioneering in the North Island was carried out by Dr. Dieffenbach, a German medical man who arrived in New Zealand in 1839. He explored the northern peninsula beyond the Bay of Islands, made extensive journeys throughout the central and southern portions of the island, and in 1849 was the first European to ascend Mount Egmont.

In the South Island the country along the east coast to the most southern portion of the island was traversed in 1843-1844 by Dr. Edward Shortland, who practised for many years in New Zealand and for a long time was Protector of Aborigines. A more detailed examination of these coastal regions from Banks Peninsula southward was made in 1844 by Tuckett (principal surveyor of the New Zealand Company) and Dr. David Monro (afterwards Sir David, and Speaker of the House of Representatives). After reaching the extreme south they crossed Foveaux Strait and visited Stewart Island. Andrew Sinclair, a surgeon in the Royal Navy, who in 1844 became Colonial Secretary in New Zealand, in 1861 accompanied Haast in the exploration of the headwaters of the Rakaia and Rangitata, and was drowned in the latter river after they had discovered the Tyndall Range. Dr. (afterwards Sir James) Hector, already mentioned as a distinguished geologist and explorer in America, was appointed provincial geologist of Otago in 1861, and four years later was the director of the first geological survey of the Dominion. In 1863, in a small yacht of twenty tons, he set out from Dunedin to explore the west coast sounds. After carefully surveying Preservation Inlet, Chalky Inlet and the other inlets to the north, he reached Martin's Bay, where he left his yacht. With three companions he traced the Kotuka River to its source in Lake Kakapo, and thence he travelled by the Greenstone Pass to Lake Wakatipu, thus opening up a route from the lakes across the ranges to the coast.

Africa.

As explorers and administrators in *partibus infidelium*, members of our profession have won the greatest fame and done the most splendid service in the continent of Africa. There, not forgetting the fine work of Irishmen like Joseph Moloney and Surgeon Parke, as in medicine, the discoveries of the Scots are of prime importance. To three great Scotsmen of world-wide fame Africa owes an inestimable debt for its exploration and development: to Mungo Park, to David Livingstone and to Sir John Kirk.

Mungo Park (1771-1806), after serving his apprenticeship to Dr. Thomas Anderson, a surgeon of Selkirk, and qualifying at the University of

Edinburgh, came to London. There he received an appointment as assistant surgeon to the *Worcester*, an East Indiaman, and made a voyage, which occupied a year, to Sumatra. On his return to London he offered his services to an association then recently formed for promoting discoveries in the interior of Africa. His offer was accepted. With instructions to find the source of the Niger and to visit the principal towns *en route*, Park, aged twenty-four, set out in May, 1795, on an African trader for the Gambia. After spending a few months learning the language and collecting information, in December, 1795, with only two servants, he left Pisania and struck eastwards towards the Niger. He explored that segment of Africa and the Niger in part, arriving back eighteen months later at Pisania. He then returned to Scotland, and not long afterwards married Dr. Anderson's daughter and settled down as a medical practitioner at Peebles. In 1799 he published the account of his travels; it was applauded as one of the greatest contributions to geographical knowledge.

The quiet life of a general practitioner was not to last for long. Park admitted that he did not like general practice and would rather go back to Africa than practise at Peebles. Having had experience of both ways of life, he "gave the preference to travelling as a discoverer in Africa than wandering night and day in the wilds of his native land in the capacity of a country medical practitioner". About this period Sir Joseph Banks suggested sending Park out to Australia to carry on exploration; for some reason the proposal fell through. In 1804 the Colonial Office asked him to take charge of an expedition, the great object of which was to pursue the course of the Niger to the utmost possible limit to which it could be traced. Park jumped at the chance, and to the remonstrances of his relatives he replied that "a few inglorious winters of country practice at Peebles was a risk as great, and would tend as effectively to shorten his life as the journey which he was about to undertake".

In January, 1805, he sailed once more to explore the Niger, but this time in command of an expedition of forty-four Europeans, including his brother-in-law, Dr. Anderson. Seven weeks later the party took its departure from Kayee on the Gambia for the interior. Disaster soon overtook the expedition. Sickness and privation took a heavy toll, and when at last the Niger was reached, out of forty-four Europeans who had left Gambia in perfect health, only five remained. Park's last letter was dated November 19, from Sansanding; written in circumstances that would have made most men return long before, he says:

My dear friend, Mr. Anderson, and likewise Mr. Scott are both dead, but though all the Europeans who came with me should die, and though I were myself half dead, I would still persevere; and if I could not succeed in the object of my journey I would at last die on the Niger.

Yet still undaunted, with four white men, three slaves and an Arab interpreter, he continued on his

way down the Niger. Almost constantly they had to fight their way past hordes of natives gathered on the banks, until at Bussa, where there was only a narrow passage, the natives blocked their path. After defending themselves with great bravery against overwhelming odds, they threw aside their muskets and, attempting to escape by jumping into the Niger, were drowned in the rapids. From Bamako to Bussa, Park had followed the course of the river for one thousand miles; he needed only another 720 miles to bring him to the sea. He had shown the true course of the Niger and opened up for the first time a large part of the north-west portion of Africa.

Mungo Park's pioneering work in western Africa proved an incentive to many other explorers, among whom not the least were some of his own profession. In 1821 a young Scottish physician, Walter Oudney, M.D. (Edinburgh), attacked the Niger from another direction. Tripoli at that period carried on a thriving trade with the Nigerian countries of Bornu and Sokoto. Oudney had been appointed political agent to Bornu, and determined to endeavour to discover the source of the Niger, crossing the Sahara from Tripoli. Assisted by Lieutenant Hugh Clapperton and Major Dixon Denham, he left Tripoli for the interior at the end of 1821. They made their way across the desert, discovered Lake Tchad, and by March, 1823, had reached Kuka, the capital of the Kingdom of Bornu. There the explorers rested for some months; they had endured much privation, and Oudney showed signs of phthisis. Though almost in a dying condition, he determined to go on. On December 14, 1823, Oudney and Clapperton left Kuka to explore the country towards the Niger. A month later, on January 12, 1824, Dr. Walter Oudney, only thirty-two years old, died of consumption. In the following year Clapperton was back in West Africa at the head of an expedition dispatched by the British Government. Two medical men were associated with the expedition: Dickson, who early lost his life, and Morrison, who died after they had reached the country of Yoruba.

A further expedition left England in 1841 to explore the River Niger district for geographical and commercial purposes. James Ormiston McWilliam, a naval surgeon, was appointed medical officer of this expedition, and on his return in 1843 published his "Medical History of the Niger Expedition". The next medical explorer to make his appearance in western Africa was a rather remarkable man, William Balfour Baikie, M.D. (1825-1864). After taking his degree at Edinburgh, Baikie joined the Royal Navy as assistant surgeon in 1848. In 1854 an expedition was sent out on the exploring vessel the *Pleiad*, to sail up the Niger River. Baikie joined as surgeon and naturalist, but on the death of the captain at Fernando Po succeeded to the command. They explored two hundred and fifty miles higher up the river than had previously been reached before returning to England. In 1857 Baikie left England on a second

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expedition. The *Pleiad* was wrecked, and when the rest of the explorers decided to return to England, he carried on the expedition alone. Six hundred miles inland, at the junction of the Niger and Benue Rivers, he bought land and established a large native settlement, over which for seven years he ruled. He opened up markets for their products, made roads, collected the vocabularies of numerous native dialects and translated parts of the Bible and the Book of Common Prayer into Hausa. He opened up the navigation of the Niger, explored the surrounding countries, and before he left on a visit to England in 1864, had established a civilized community in western Africa. Baikie was only thirty-nine years old when he died at Sierra Leone on December 12, 1864, on his way home.

In 1881 Brigade Surgeon V. S. Goulsbury, M.D., C.M.G., commanded an expedition which explored the Upper Gambia. Goulsbury was administrator of the Government of Gambia from 1877 to 1884, and later became administrator of St. Lucia. Another doctor who was an explorer and administrator, and took a prominent part in extending the influence of his country (in this case France) in central and western Africa, was a French naval medical officer, Dr. Jean-Marie Bayol. In 1880 he was a member of General Gallieni's expedition which set out to explore the country from the confluence of the Bafing and Bakoy Rivers to Bammako on the Niger. Later he led an expedition into what is now French Guinea and obtained its official recognition as a French protectorate. Bayol ultimately became Governor of the Benin Settlements on the Ivory Coast.

Leaving western Africa, let us follow in the tracks of those who approached the exploration of the dark continent from Cape Colony. While yet the Cape was in the possession of the Dutch, the most energetic of South African explorers was a Dutch surgeon, Pieter Van Meerhof, who, during the years following 1860, led several expeditions northward, until, while leading an expedition to Mauritius and Madagascar, he was murdered by the natives at the Bay of Antongil. About 1802 the German traveller and naturalist Dr. Martin Heinrich Karl Lichtenstein became physician to the Governor of Cape Colony; between the years 1803 and 1806 he travelled over nearly all Cape Colony and into Bechuanaland as far as Kuruman. Dr. Van der Kemp, a Dutch physician and clergyman, explored far into Kaffirland.

But undoubtedly the greatest of South African pioneers was that wonderful explorer David Livingstone (1813-1873), who pushed back the curtain of darkness past the Zambesi into the regions of Equatorial Africa. In 1840 Livingstone qualified at Glasgow as a Licentiate of the Faculty of Physicians and Surgeons, and he records that "it was with unfeigned delight I became a member of a profession which is preeminently devoted to practical benevolence and which with unwearied energy pursues from age to age its endeavours to lessen human woe". In the following year he set

out for Cape Colony, and for the next eight years was engaged in medical mission work among the Bechuana people. To the end of his life Livingstone never forgot that he was a doctor, and his writings are full of his medical experiences. In one of his letters he says:

I have an immense practice; patients walk 130 miles for my advice; this is the country for a medical man, but he must leave fees out of the question.

In 1849 Livingstone explored northward from South Africa across the Kalahari Desert, discovered Lake Ngami and the Zuga River, and later explored the Zambesi and Kuanza basins. Five years later, after exploring the Zambesi and travelling westward to Loanda on the Atlantic, he crossed the continent from west to east, to Quilimane on the Pacific, discovering *en route* the most magnificent falls in the world, the Victoria Falls. He then went back to England.

Returning in 1858, Livingstone was given the rank of consul by the British Government. During the next few years he explored the Zambesi and its tributaries, and discovered Lakes Nyassa and Shirwa. In 1866 he started out to undertake the task on which he had set his heart, the finding of the sources of the Nile. During the next few years he made many great discoveries, explored the Rovuma River, and made his way to Lakes Bangweolo and Tanganyika; he was the first European to travel the whole length of Lake Tanganyika. For many years the outside world had no news of him, and it was reported many times that he was dead. H. M. Stanley, after a long struggle through the jungle, found him ill and destitute at Ugiji, on the shores of Lake Tanganyika, on October 28, 1871. For four months Livingstone and Stanley explored together the northernmost end of the lake, and then, though Stanley urged him to return to England, Livingstone would not, but on Stanley's departure started off on another journey, which proved to be his last. Having just missed finding the source of the Nile, he died at Chitambo's village in Ilala on May 1, 1873. His heart lies under a tree in central Africa, his body in Westminster Abbey.

He needs no epitaph to guard a name
Which men shall prize while worthy work is known;
He lived and died for good—be that his fame.
Let marble crumble: this is Living-stone.¹

Livingstone's work was continued by others, notably by his friend Sir John Kirk, the man whom Sir Harry Johnston described as "the maker of British East Africa". Born, like Livingstone, in Scotland, Kirk pursued his medical studies at Edinburgh, where he graduated with the degree of Doctor of Medicine in 1854. Appointed as medical officer and naturalist of Livingstone's expedition to the Zambesi in 1858, Dr. John Kirk was for the next five years Livingstone's constant companion and his chief lieutenant in the exploration of the Zambesi region, particularly the tracing of the

¹ The concluding stanza of the lines which appeared in *Punch* on April 25, 1874.

River Rovuma and part of Lake Nyassa. With Livingstone, Kirk proved his mettle as an explorer, and acquired a wide knowledge of the Africans, the Arabs and the slave traffic, so that when in later years he became consul-general at Zanzibar he was able to carry to fruition his leader's last wish, the abolition of the Arab slave-raiding and slave-trading in eastern Africa. James Stewart, of Lovedale, like Livingstone a medical missionary, explored the Shiré and Zambezi districts in 1862-1863, Lake Nyassa in 1875, and was the founder of Livingstonia.

Much valuable exploratory work in eastern Equatorial Africa was carried out during the years 1875-1886 by the German explorer Dr. Wilhelm Junker¹ in his investigation of the Nile Congo watershed. The outbreak of the Mahdist Rebellion in 1885, besides preventing Junker's return to Europe through the Soudan, deprived Emin Pasha,² the Governor of the Equatorial Province, of all hope of succour from the north. It was agreed that Junker should endeavour to make his way southward to the coast and obtain relief.

On January 2, 1886, he left Wadelai, reached Zanzibar in December, and thence proceeded to Europe to plead the cause of Emin Pasha and the Equatorial Soudan.

Stirred by Junker's appeal, England organized an expedition of relief. At the beginning of 1887 the Emin Pasha Relief Expedition, under the command of H. M. Stanley, set out by the Congo route; on April 29, 1888, they found Emin Pasha, and after three years' pilgrimage of amazing perseverance and fortitude, during which they crossed the continent from west to east, arrived at Zanzibar in December, 1889. The medical officer of the expedition, Surgeon-Major Thomas Heazle Parke (he also had charge of a company) won unstinted praise. Mr. Stanley was unsparing in his tributes to Parke's splendid services; speaking of the events at Kavalli in March, 1889, he said:

This expedition possesses the rarest doctor in the world. No country in Europe can produce his equal, in my opinion. There may be many more learned, perhaps more skilful, but the best of them have something to learn from our doctor. He is such a combination of sweetness and simplicity; so unostentatious, so genuinely unobtrusive. We are all bound to him with cords of love. We have seen him do so much out of pure love for his "cases" that human nature becomes ennobled by this gem. He is tenderness itself . . . At Abu Klea our doctor was great; the wounded had cause to bless him; on the green sward of Kavalli, daily administering to those suffering blacks, unknowing and unheeding whether they regarded him, our doctor was greater still.

On a later occasion Stanley said of Parke:

He spoke to every woman in the interior of Africa with the same gentleness and courtesy as he would to a lady in a drawing-room at home.

¹ Wilhelm Junker (1840-1892), born at Moscow, studied medicine at Göttingen, Berlin and Prague, but practised medicine for only a brief period. His earlier travels were in Iceland.

² Dr. Emin Pasha (his real name was Eduard Schnitzer), born in 1840 at Oppeln, in the Prussian province of Silesia; graduated in Medicine at Berlin University, 1858. Joined the Egyptian service in 1875, became associated with General Gordon, by whom he was appointed, in 1878, Governor of the Equatorial Province.

Surgeon Parke received the gold medal of the Royal Geographical Society, and in 1891, at the annual meeting of the British Medical Association, he was awarded the gold medal of the Association "for distinguished merit". In 1893, when he was only thirty-four years old, this gallant Irishman died, and three years later the only statue to an army surgeon in the United Kingdom was unveiled by Lord Roberts on the Leinster Lawn, Dublin.

Noted in the exploration of northern and central Africa were two German doctors, Gerhard Rohlfs and Gustav Nachtigal. Rohlfs in 1867 took part in an expedition to Abyssinia and later made an exhaustive survey of the Libyan desert. Nachtigal set out from Tripoli in 1869 and entered Darfur in 1874 by way of Lake Tchad and Waday. Dr. C. J. Tonkin was medical officer and naturalist to the Central Soudan Expedition (1893-1895); Joseph Augustus Moloney, L.R.C.P. (Ireland), took a prominent part in the Stairs expedition to Katanga in 1890, and in 1895 led an expedition into central Africa; Donaldson Smith, an American medical man, in 1895, was the first to reach Lake Rudolph from the north, through Somaliland; Dr. Alexander Wallaston¹ in 1905-1907 was a member of the British expedition to Ruwenzori, central Africa; Dr. Cuthbert Christy (1863-1932) is the last of the well-known African explorers.

Asia.

In the continent of Asia, too, we find members of the medical profession among the foremost in carrying the lamp of knowledge into the unknown.

Thomas Manning (1772-1840), the first Englishman to enter the "forbidden city", Lhasa, the capital of Tibet, does not seem to have obtained a medical degree, though he attended the Westminster Hospital for some time. Nevertheless, in 1806, on the recommendation of Sir Joseph Banks, the Court of Directors of the East India Company gave him a free passage to proceed as a doctor to their factory at Canton. For four years he remained in China, acquiring the reputation of being the finest Chinese scholar in the world; but he longed to visit Lhasa. On October 11, 1811, he arrived at the frontier of Tibet, where he found a detachment of Chinese troops, some of whose maladies he was able to cure. The Chinese general, as a mark of gratitude, gave him permission to travel with them, as a medical man, to the holy city, where they arrived in December, 1811. In his capacity as a doctor Manning stayed four months at Lhasa. Dr. T. Thompson, one of the Tibetan Boundary Commissioners in 1847, was the first European to cross the Karakoram Pass; he also accompanied Sir Joseph Dalton Hooker, M.D. (Glasgow), on many of his journeys. Four years after Hooker returned from the Antarctic he set off for an expedition to the Sikkim and Nepal Himalayas, where he spent four

¹ Alexander Wallaston later joined an expedition to explore Dutch New Guinea (1909-1911); he was the leader of a second expedition to the same district in 1913-1914. In 1921 he was medical officer and naturalist to an Everest expedition.

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years collecting and studying the flora of India and making maps of the passes into Tibet. Two doctors were of Francis Garnier's party when he first explored the River Mekong in 1866. Dr. W. Griffith explored Assam and Bhutan. Sir George Scott-Robertson, of the Indian Medical Service, was the first European to explore Kafiristan.

In the conquest of the Himalayas Dr. Tom George Longstaff and Dr. Theodore Howard Somervill have taken a very prominent part. In 1907 Longstaff climbed Trisul, 23,406 feet; in 1922 he, Somervill and another doctor, Wakefield, joined General Bruce's expedition for the assault on Mount Everest. A party of three, including Somervill, reached the then record height of 26,985 feet. In 1924 Somervill joined Bruce's second expedition, and he and Colonel Morton reached the height of 28,000 feet, less than 1,000 feet from the top. The year 1931 saw the achievement of the highest summit ever scaled, when Mr. F. S. Smythe's small expedition of six, including Dr. C. Raymond Greene, succeeded in reaching the summit (25,447 feet) of Mount Kamet, in the central Himalayas.

The Arctic Regions.

Enshrined in the romantic and fascinating story of the conquest of the poles, figure the names of many doctors, as leaders, scientists and surgeons of exploring parties. Not a few of the most famous commanders have been medical men; moreover, nearly all expeditions have contained at least two doctors, one to perform almost purely medical duties, the other in charge of scientific observations, so that in Arctic exploration the medical profession has an interest peculiarly its own. In the first fifty years of the nineteenth century few medical men won fame in the Arctic. Dr. Edwards sailed with Captain Parry in the *Hecla* on his Arctic expeditions of 1819 and 1821. On Parry's third voyage, in 1827, he was accompanied by a naval surgeon, Robert McCormick, of whom more will be said later. In 1819 Franklin led an expedition of five, including Dr. John Richardson, to explore the coast of North America from the Coppermine River eastward. During three years of terrible hardship they journeyed 5,500 miles and mapped some five hundred miles of coast. Richardson again accompanied Franklin in 1825 on a search for the north-west passage.

In 1845 Sir John Franklin set out with the *Erebus* and the *Terror* to make one more attempt to pass through the north-west passage. Dr. Stanley was the surgeon of the expedition, and Dr. Harry Goodsir assistant surgeon and naturalist. After a lapse of two years without news of the ships, relief expeditions were sent out; for several years the search was carried on by many gallant men, prominent among whose leaders were four doctors, who, though at first not successful in their object, discovered many thousand miles of coastline and explored a vast extent of unknown country. Chosen to command the first overland expedition, Dr. Sir John Richardson had already accomplished much

exploratory work with Franklin, as surgeon, naturalist and second in command, on his two previous voyages. Setting out in 1847, Richardson explored the region between the Coppermine and Mackenzie Rivers, but had to return without news of Franklin. In 1849 Dr. Robert A. Goodsir, a brother of the assistant surgeon of Franklin's expedition, joined the Dundee whaler *Advice* and made a fruitless search; in 1850 he again went to the Arctic as surgeon on board the *Lady Franklin*, but discovered only Franklin's winter quarters for 1845-1846.

A generous merchant from New York now provided two well-equipped ships for the search. Known as the Grinnell expedition, it set out from New York in May, 1850, under the command of two officers of the United States Navy, accompanied by an American naval surgeon, Dr. Elisha Kent Kane. They found traces of an abandoned camp, but returned to America not knowing whether Franklin and his men were still alive. Kane was not deterred by one failure. He wrote the story of the expedition and delivered lectures, devoting the proceeds to the next expedition, of which he was appointed commander. He obtained leave from the Navy, and in 1853 set sail in the *Advance* to find Franklin. His crew consisted of seventeen officers and men, including a young surgeon, Isaac Israel Hayes. The story of Kane's journey is one of the most famous in the annals of exploration. Despite all difficulties he pushed on to find the lost Franklin; for some months Kane and his men lived on frozen seal and walrus meat; eventually they had to abandon their ship, hopelessly ice-jammed, and make their way back over ice and sea. After eighty-one days of exposure they were picked up by a Danish boat and reached New York in 1855, after an absence of thirty months. Though they found not Franklin, they had achieved some fine work. Kane had reached the then farthest north on land, planting the American flag at 82° 27' north, and they had charted nearly a thousand miles of new sea coast. Honours were heaped upon him, but two years later, when only thirty-seven years of age, this Arctic explorer of the first rank died. The highest award of the American Geographical Society is termed the Elisha Kent Kane Medal, and it is interesting to note that in 1931 it was conferred on the Australian explorer Sir Hubert Wilkins.

A British expedition had also been dispatched in 1850 to the polar seas to search for Franklin, under the command of Captain (afterwards Sir Robert) McClure. With him sailed as naturalist a surgeon of the Royal Navy, Dr. (afterwards Sir Alexander) Armstrong. The expedition is famous in that it discovered the north-west passage. Armstrong spent five years in the Arctic regions and was frequently mentioned in dispatches. He later became Medical Director-General of the Royal Navy. One of the first to call the attention of the Admiralty to the fate of Sir John Franklin was a naval surgeon, Robert McCormick, who had much experience in exploration, both in the Arctic and Antarctic. But it was

not till 1852 that he was sent out to join the search, being given the command of an open boat, called the *Forlorn Hope*, manned by six volunteers. For his work in solving the vexed question of the opening between Baring Bay and Jones Sound he was awarded the Arctic Medal in 1857.

The fourth medical leader of a search expedition now came on the scene, Dr. John Rae (1813-1893), to whom was awarded the Royal Geographical Society's gold medal, when he returned in 1854 with authentic evidence of the fate of Sir John Franklin. Altogether Rae was such a noteworthy explorer that a longer sketch of his career is merited. After completing his medical course Rae had, in 1833, become medical officer to the Hudson Bay Company. His first journey was undertaken in 1846. With ten men and two small boats he succeeded in examining seven hundred miles of unknown coast on the northern mainland of America. In 1848 he accompanied Sir John Richardson in his search for the missing Franklin expedition. A year later he was given the command of the next expedition. He examined and mapped the whole of Wollaston Land and Victoria Land, travelling in all some 5,300 miles. In 1853 Rae again set out in command of an expedition. He proved King William's Land to be an island, and a year later, in 1854, met some Eskimos who told him that they had seen four years earlier some white men travelling over the ice near King William's Land and that later on in the same winter they had found their frozen bodies. Rae obtained from them various articles that obviously once belonged to members of the lost expedition, silver spoons *et cetera*, as well as a silver plate inscribed with Sir John Franklin's name. Some of these possessions were brought to England and Rae, as the first man to bring authoritative news of Franklin, claimed, but was unjustly refused, the Government award of £10,000 offered to any party or parties giving information leading to the finding of Franklin's expedition, or of its fate. It was left to McClintock, with Dr. David Walker as surgeon, in 1859-1860, to solve completely the Franklin mystery.

Although the incentive of finding Franklin was now gone, the fascination of the Arctic had won the heart of the surgeon of Kane's second expedition, Dr. Isaac Israel Hayes. In 1860 he conducted an expedition to the Arctic to survey the coasts of Greenland and press towards the North Pole. He planted his flag at $81^{\circ} 35'$ north, but his ship being too seriously damaged to continue northward, returned home to America. In the following years other doctors came into the Arctic regions as members of expeditions. The chief of the scientific department of the American *Polaris* expedition to the North Pole in 1870-1873 was Dr. Emil Bessels, a German medical graduate of Heidelberg. Dr. Pavy lost his life with the Greely expedition in 1881. In the same year the ship *Jeanette* (United States Arctic Expedition) sank in the Arctic Ocean off the north coast of Siberia. After a desperate struggle

with starvation, cold and storm, the medical officer, James Markham Ambler, of the United States Navy, perished with the rest of his companions.

The next to command an expedition was Dr. Frederick Alfred Cook. The son of a medical man, Cook was born in 1865 and took his medical degree at the University of New York in 1890, afterwards practising in Brooklyn for a brief period. In 1891 he was chief surgeon of Peary's second Arctic expedition, and in 1897 was a member of the Belgian Antarctic expedition headed by Captain Gerlache. It was on this latter voyage that Cook saved the life of a fellow member, the celebrated explorer Roald Amundsen. Although nothing can condone Dr. Cook's subsequent fraudulent claim to have reached the North Pole, it is worth while quoting Amundsen's tribute to his colleague in describing the misfortunes of the Belgian Antarctic expedition. The ship *Belgica* for thirteen months was ice-jammed.

It was in this fearful emergency, during those thirteen long months, in which almost the certainty of death stared us steadily in the face, that I came to know Dr. Cook intimately and to form the affection for him and the gratitude to him which nothing in his later career could ever cause me to alter. He, of all the ship's company, was the one man of unfaltering courage, unfailing hope, endless cheerfulness and unwearied kindness. When anyone was sick he was at his bedside to comfort him. When any was disheartened he was there to encourage and inspire, and not only was his faith undaunted, but his ingenuity and enterprise were boundless.

In 1906 Cook turned his attention to mountaineering, and was the first to ascend Mount McKinley in Alaska. In 1907 he set out for the North Pole; for fourteen months he lived in the field above 80° north. How far he proceeded will never be known. He claimed to have reached the pole in April, 1908, a year before Peary (Dr. Goodsell was the surgeon and leader of one of the parties) accomplished the feat on April 6, 1909. As soon as Peary heard of Cook's claim he derided it, and an angry controversy took place, in which each poured scorn on the other's claim to have reached the pole. Cook undertook lecture tours in Denmark and the United States, but so much ridicule was thrown on his claim that eventually he submitted it to the Council of the University of Copenhagen for examination. The council reported that the documents he had submitted were insufficient proof that he had reached the pole, and that his account of his journey to that goal was utterly inadequate. Cook wrote a book, "My Attainment of the Pole", in which he recorded his journey to the pole accompanied by two Eskimos, and discussed Peary's claims. But public sympathy was with Peary, and his claim to have reached the goal was accepted, whereas Cook's was ridiculed. Peary's claim was endorsed shortly after his return from the Arctic by the American Natural Geographical Society, which presented him with a special gold medal, and by the Naval Committee of the Congress of the United States, which examined him and his records. While Cook's claim has been discredited, Greely says that:

It is beyond question that his field of experience in 1907-1909 was most remarkable, rarely if ever equalled and never surpassed in its extent, duration and endurance—equipment, conditions considered.

If we can turn a blind eye to his brief, unhappy career as a pretender, Cook remains an explorer of whom any profession might feel proud.

Antarctica.

And now leaving the polar regions of the north, let us briefly trace the paths of some of the doctor explorers in Antarctica. The first British expedition on a large scale took place in 1839, when the *Erebus* (370 tons) and the *Terror* (350 tons), under the command of Captain James Clark Ross, set sail on a voyage for magnetic observation and discovery in the South Polar regions. The chief medical officer, geologist and zoologist of the expedition was Robert McCormick (whose search for Franklin has already been mentioned). The assistant surgeon and botanist was a youthful medical graduate of Glasgow, aged only twenty-five years, Joseph Dalton Hooker, later known to fame as an illustrious botanist and for twenty years director of the Kew Gardens. Ross's party discovered the Ross Ice Barrier, named South Victoria Land, Ross Island and Mounts Erebus and Terror, and reached a point 710 miles from the pole, the furthest latitude south attained for many years.

After the return of Ross's expedition there was a lull in Antarctic exploration, attention being devoted chiefly to the Arctic regions, and it was not till 1897 that an Antarctic expedition of any magnitude was dispatched. In that year the Belgian Antarctic expedition under the command of Lieutenant de Gerlache departed for the south. Included in the expedition were Dr. Frederick A. Cook (who later claimed to have discovered the North Pole ahead of Admiral Peary) and Roald Amundsen, who afterwards became celebrated as an explorer as the conqueror of the South Pole. It is worthy of note that Amundsen had been a medical student and passed two years of his medical course in Norway before he went to sea. Scurvy attacked the expedition, only three escaping; and of these three, two were Cook and Amundsen, who, through the knowledge obtained from their medical training, avoided it by eating fresh seal meat. Gerlache would not permit his men to eat the meat; but when he fell ill Amundsen took charge of the ship, and by providing the crew with fresh seal meat slowly conquered the disease. When their ship *Belgica* became hopelessly ice-jammed, Cook was their leader in cutting a channel, and Amundsen in his memoirs is outspoken in Cook's praise.

In 1901 Captain Scott led his first Antarctic expedition in the *Discovery*. The senior medical officer and official botanist was Dr. Reginald Koettlitz, who had already served in the Arctic with the Jackson Harmsworth expedition to Franz-Josef Land. The second medical officer was Dr. Edward Adrian Wilson, who, in addition to his medical duties, was zoologist and artist to the expedition. Scott's expedition was the first really

to explore the Antarctic continent. In 1902 the Scottish National Antarctic expedition departed in the *Scotia* under the leadership of Dr. William Spiers Bruce, who had first visited the Antarctic in 1892 as naturalist and surgeon on the *Balaena*. Dr. J. H. Harvey Pirie was medical officer and geologist. After two years of scientific work in the Antarctic, where they discovered Coats Land, surveyed 4,000 miles of uncharted ocean, and made rich zoological and geological collections, they came home. Bruce was presented with the Gold Medal of the Royal Scottish Geographical Society.

Dr. Jean Charcot,¹ the son of the famous neurologist, besides winning distinction in medicine in 1903-1905 and again in 1908-1910, was the leader of French scientific expeditions to the Antarctic; in the latter expedition he discovered Charcot Land. In 1907-1909 Sir Ernest Shackleton, a doctor's son, led the British Antarctic expedition, their ship the *Nimrod*. Three doctors were in the party: Dr. A. F. Mackay was senior medical officer, Dr. Eric Marshall was surgeon and cartographer, and Dr. W. A. R. Mitchell was surgeon on the staff of the *Nimrod*. The expedition got within 100 miles of the pole and located the South Magnetic Pole, Mackay being one of the three who were successful in discovering the latter.

Setting out in the *Terra Nova* in 1910, Captain Scott made his second and successful venture for the South Pole. Two surgeons of the Royal Navy, G. Murray Levick and Edward L. Atkinson, were members of the expedition, and Dr. E. A. Wilson, who had been with Scott on his previous Antarctic expedition, was chief of the scientific staff and second in command. Of Wilson, Scott's closest comrade on his first as well as his last voyage, no praise is too high. He was an accomplished artist, a great field naturalist, and, by reason of his personal qualities, general counsellor of the expedition. The most fitting words in which to tell of Wilson and his heroic part are those of Scott himself. In one of his letters Scott writes:

Wilson was the finest character I ever met. Practical, loyal and unselfish, humorous and tactful—the most popular member of the party.

Again, quoting from his letter written on October 26, 1911:

Wilson has been all that you expected of him, and I know that it is saying a great deal. I find myself wondering at his energy, his tact or his unselfishness—such qualities have made him beloved by all, and in return he wields the power of an oracle—he is consulted in everything, from the larger issues to ridiculously small details of daily life and work. I hold him mainly responsible for the extraordinarily amicable relations which have existed among us—it is really a fact that there have been no quarrels or other social troubles since the expedition started. To sum up, he has proved himself a greater treasure than even I expected to find him.

¹ Dr. Jean Charcot was the hero of a famous medical duel. In 1898, considering the memory of his illustrious father insulted by an article written by a Dr. Lagelouze, he challenged the writer. On June 9 they fought with swords, until Charcot received a wound that prevented him from continuing, when honour was declared to be satisfied. Charcot led several expeditions to the North Polar regions as well; in 1936 he and every member of his party were drowned when their vessel, the *Pourquois Pas*, sank in a storm off the coast of Iceland.

Scott, Wilson, Oates, Bowers and Evans reached the South Pole on January 18, 1912, only to discover that Amundsen had been there a month earlier. Ten days later began their return journey of eight hundred miles to their base—that tragic journey in which, only eleven miles from a well-stocked depot, they perished from cold and hunger in the blizzard. To Dr. Atkinson fell the command of the party which set out to find them, and, finding their bodies, gathered the records and effects of the dead men and erected a great cairn and cross to their memory.

The next British expedition to leave was Mawson's Australasian expedition of 1911 to the nearer coasts of Antarctica, their ship the *Aurora*. The doctor members were Dr. E. A. Whetter, Dr. S. E. Jones and Dr. A. L. McLean, the chief medical officer and bacteriologist and probably the first Australian medical graduate to reach the Antarctic. On their return to Australia McLean was awarded the King's Polar (Antarctic) Medal in 1915, and collaborated with Sir Douglas Mawson in the production of "The Home of the Blizzard", in two volumes. In 1914 Shackleton led his second expedition in the *Endurance* and the *Aurora*. The medical officers were Dr. A. H. Macklin and Dr. McIllroy. On Shackleton's last voyage, in the *Quest* (1921), Macklin and McIllroy were again members of his party. The Byrd Antarctic expedition of 1928, in which the leader successfully flew over the South Pole, had as its medical officer Dr. Francis Coman. As medical officer of Mawson's British, Australian and New Zealand Antarctic expedition of 1930, to chart the ice-bound coasts of the Australian quadrant, Dr. W. W. Ingram, of Sydney, has worthily upheld the reputation established by his predecessors.

Reference.

¹ R. Beazley: "Dawn of Modern Geography", Volume III.

CARCINOMA OF THE CERVIX FROM THE POINT OF VIEW OF THE GENERAL PRACTITIONER.¹

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In the report of the eighth Australian Cancer Conference, Table V shows that the deaths from cancer of the female genital organs per 100,000 of mean population has increased within the Commonwealth from 15.3 in 1908 to 22.0 in 1935. As an offset to this, progress of a very definite kind has been made within recent years in the treatment of carcinoma of the *cervix uteri*, particularly by means of radium and deep X ray therapy.

This improvement in the attitude of the gynaecologist towards what was formerly one of his most

unsatisfactory problems has led me to set down certain points for the consideration of the general practitioner which might lead to still better results. This desirable objective might be attained by the recognition and removal of predisposing causes and by more accurate diagnosis of the disease in its incipient stage.

Up to the present the gynaecologist has been treating cancer of the cervix when the clinical and pathological appearances are those of a disease in an advanced stage of development. The classical symptoms of foetid discharge, bleeding and pain, with the signs of tumour formation, or ulceration, metastasis and a histological picture of invasion and multiplication of cells, are all signs of a disease process which has slowly gained momentum over a period of possibly ten or twelve years.

The percentage of cures that can be expected in the different stages of this disease, either from the formidable operation of panhysterectomy or from the simpler and more effective methods of radiation therapy, have now been satisfactorily assessed from statistics gathered in many countries by careful and competent observers. As a matter of first importance these investigations have established the fact that cancer of the cervix is cured in many instances by the present means at our disposal, the chances of a successful result being directly proportionate to the earliness of their application.

It is logical to assume that carcinoma of the cervix passes through a stage when it is theoretically curable in 100% of cases. This is the basic principle upon which depends the future control of the disease. Success in this respect depends upon a coordinated and painstaking effort throughout the profession, or at least amongst all those who treat diseases in women, to recognize a morbid process in its incipient stage and bring it to treatment.

It has been estimated that 95% of the women who contract carcinoma of the portio have had one or more children. In these women the cervical tissues during parturition have suffered laceration, which, unless healing is complete, become the site of chronic inflammation, leading later on to erosion and hypertrophy of the tissues. Malignant disease rarely develops in scar tissue, but cervical lacerations destroy the normal architecture of the tissues, interfere with their nutrition and expose the more delicate columnar epithelium of the cervical endometrium to chronic irritation and to stress from inflammatory processes.

Chronic irritation of the cervical endometrium in another form is caused by the existence of the small mucous polypus, at the base of which carcinoma is prone to develop. It has been suggested by Percival that mucous polypus is the preceding condition in the 5% of *nulliparae* who contract cancer of the cervix.

A series of 2,895 cases of endocervicitis is quoted by the same author, in which the inflammation and erosion following laceration had been efficiently

¹ Read at the fifth session of the Australasian Medical Congress (British Medical Association), August, 1937.

treated. In a follow-up of these cases over a period of ten years there had not been a single case of carcinoma. This brings me to the question of prophylaxis. Here it is essential that every patient coming up for examination should have a speculum passed when it is physically possible, and the cervix should be exposed for inspection. All cervical lacerations in which inflammation persists should be subjected to effective treatment, and erosions should be healed by the application of the actual cautery or by diathermy coagulation. Mucous polypi should be removed, with destruction of the tissue at their base, by cautery or by excision.

In recognizable cancer of the cervix (by which I mean the case in which the disease is unmistakable, and therefore in an advanced stage) treatment by surgery has developed to a point where we cannot expect better results, and the limits of radiation therapy, according to our present knowledge, are already in sight. If improvement is to take place in the control of the disease, we must seek to develop better methods of diagnosis, whereby incipient cancer can be detected in an earlier stage of its development than has been the case in the past. Walter Schiller, of Vienna, approached this problem of earlier diagnosis by the microscopic examination of serial sections from 135 cervices removed by total hysterectomy for other causes, and in which carcinoma was quite unsuspected. In this series he found four cases (2.96%) showing microscopic evidence of what he considered the earliest stage of cervical cancer.

His conclusions in this study harmonize with the opinion of other authorities and may be summarized as follows. Under the influence of some stimulus, such as chronic irritation following long-continued inflammation, the cancer process in some unknown way begins in a single cell of the basal layer of the epidermis of the portio. Carrel and others have shown that this malignant cell produces some virus-like substance which is absorbed by or permeates similar normal cells in its immediate neighbourhood, inciting them in their turn to become malignant. This is the process of assimilation. It is the first stage of malignancy in cervical cancer. In this stage the extension of the growth is lateral, that is to say, on the surface only. At first there is no thickening or change in consistency in the epidermis which can be detected by sight or touch.

When this cancerous process is initiated it never stops, but proceeds inexorably to what may be considered the advanced stage, namely, that of invasion. It has acquired by this time a new method of spread: multiplication of its own cells. These units increase with such exuberance that they relentlessly invade and destroy the adjacent tissues. It is with this late stage that we are all familiar, for by this time the classical signs of malignant disease are evident to sight and touch.

During the assimilation stage the histological appearance of carcinoma of the cervix is striking and characteristic. There is an abrupt change from

normal epidermal cells, in their well-ordered, three-layer arrangement on the one side, to the turbulent disorder of the cancer cells on the other, with its blurred and broken basal membrane, above which there appears a confused mass of cells irregular in size, form and staining reaction, with little or no differentiation and layer building. All the signs of cancer are present except that of invasion of the stroma. When invasion does occur, the disease has passed beyond the assimilation stage, and on that account has entered the second or advanced stage.

Without attempting to go farther into the finer details of the pathological picture, let me sum up Schiller's conclusions: (i) Cancer of the cervix arises in the squamous epithelium of the portio, near the external os, and at first spreads laterally, that is, on the surface; (ii) it always begins in the unbroken epithelium and not in an ulceration; (iii) the chief histological points on which a diagnosis can be based are, first, the oblique line of demarcation between the normal and the cancerous areas, and secondly, the metaplastic atypical and polymorphous characteristics of the abnormal cells.

This striking work of Schiller would be quite useless without some guide to the locality in which this early malignant change is active, for it is obvious that these microscopic phenomena cannot be detected by sight or touch. To overcome this difficulty he has devised an ingenious aid for the clinician, whereby he can map out the area from which a specimen can be taken for section and histological examination. It was known that the upper layers of the normal epithelium covering the portio were rich in glycogen, which disappears when the epithelium becomes cornified or changed by cancer. It remained only to discover a reagent which by vital staining would bring out this distinction. It was found in Lugol's watery iodine solution (iodine one part, potassium iodide two parts, water 300 parts). When a swab soaked with the solution is held against the cervix for about thirty seconds the glycogen in the normal living epithelium takes up the stain and gives an appearance of deep mahogany brown. When an early carcinomatous process is in existence, the superficial layer of cells forming the newgrowth remains white or pink, in striking contrast with the dark, almost black staining of the surrounding normal epithelium. Schiller points out that the presence of white, unstained epithelial spots which are free from glycogen may indicate four possibilities: (i) the presence of carcinomatous layers or of incipient carcinomata; (ii) the presence of hyperkeratosis, a result of prolapse, of *decensus vaginae* or of leucoplakia; (iii) the presence of hyperkeratosis, a consequence of luetic infection; (iv) the desquamation of the upper layers of glycogenous epithelium, which may have been caused with sharp instruments or by the rough insertion of the speculum. Such traumatic desquamations are easily to be diagnosed by their form, as they resemble narrow, sharp and straight-line scratches.

This failure to stain applies also to the surface of an erosion which, of course, is covered by glandular epithelium. Hence the test is not applicable to the recognition of adenocarcinoma. This type of cancer of the portio is comparatively rare and must be sought for in the usual manner by the examination of scrapings.

The Schiller test is wholly reliable when it is clinically "negative", that is to say, when the whole of the tissues are stained uniformly. On the positive side it is subject to the limitation that Schiller has mentioned.

The technique of the test is not difficult. A generous swab of absorbent cotton wool is twisted to the end of a wooden applicator. The wool is then immersed in a quantity of Lugol's solution in a medicine glass. The cervix and upper part of the vagina are exposed through a Ferguson's or bivalve speculum. Any mucus or discharge is wiped away gently with cotton wool before the test is applied. The wet swab is then pressed firmly against the external os and portio for at least thirty seconds. After any excess of the reagent has been wiped away the surface of the cervix and upper part of the vagina is seen to be stained almost black where the epithelium is normal. Any portion of it, however small, which does not take up the stain must be regarded as needing further investigation. A specimen is taken from the area under suspicion with a specially sharpened spoon curette, the tissue being placed immediately in hardening solution for the pathologist to report upon. My own experience of the test leads me to recommend it to the general practitioner as a material aid to early diagnosis of squamous carcinoma of the cervix.

The position in regard to early diagnosis of cancer of the supravaginal cervix is not nearly so favourable. Fortunately it occurs less commonly than cancer of the portio.

It has been taught in the past that endocervical cancer, because it arises in an area covered by columnar epithelium, is necessarily an adenocarcinoma, as distinct from squamous-celled carcinoma, which originates from the portio. It is considered now, however, that this distinction is not nearly so simple or clear cut; on the contrary, it is often impossible to decide either from the naked-eye appearance or by histological examination whether a newgrowth has started in the squamous epithelium of the portio or in the columnar epithelium of the cervical endometrium.

The epithelium of the cervix shows a marked disposition to undergo metaplasia, a change that is very prone to occur in the case of columnar epithelium. This not only applies to cells that are already cancerous, but may be found in the so-called erosion and in endocervicitis, when the columnar epithelium may be seen assuming the characters of the squamous variety.

It has been my experience in hospital practice that quite often cases of carcinoma of the endo-

cervix are not recognized as such by the out-patient surgeon or by the general practitioner who recommends their admission. Cancer in this position is commonly mistaken for fibromyoma, because of the dense hardness of the greatly enlarged supravaginal part of the cervix owing to the induration of the zone of tissue external to the growth. In these cases the enlarged cervix has been well described as "barrel-shaped". A combined recto-vaginal examination in these cases is most valuable in mapping out the shape of the supravaginal part of the cervix. To confirm the diagnosis it is not difficult to obtain material for histological examination from the cervical canal with a sharp spoon.

True adenocarcinoma of the portio is rare; I have seen one case of this type.

The disease began on the vaginal surface of the anterior lip, probably at the site of an ectropion. The pathologist, reporting on a section taken from the edge of the area, stated that it showed normal gland tissue and was not malignant. This opinion led me to treat the area by deep diathermy cauterization, although on clinical grounds I had some doubt as to the nature of the growth on account of its exuberance; but I accepted the verdict of the pathologist as final. The affected site healed rapidly and became covered with squamous epithelium. Within three months the patient returned to hospital with a large mass involving the base of the bladder. No improvement took place after intensive treatment by radium and deep X rays. The patient died within six months.

This experience convinced me that a clinical appearance of malignancy is to be taken as a reliable guide to correct treatment, even when the pathological report is at variance with one's conviction.

The origin of adenocarcinoma is as a rule from the columnar epithelium of the cervical endometrium, either from the superficial cells or, more commonly, from the gland tubules. The newgrowth begins by the formation of tubular projections from the lumina of the glands.

The histological evidence of malignancy consists mainly in the invasion and destruction of the stroma by the proliferating gland tubules. This type of growth is said by competent authorities to have little tendency to invade the parametrium and adjacent viscera, and to be far less malignant than squamous-celled carcinoma, although my own limited experience does not bear this out.

Finally, the points I would emphasize as worthy of consideration by the general practitioner are the following:

1. Inspection of the cervix through a speculum in every case in which it is physically possible is of the first importance.
2. Schiller's iodine test should be applied as a routine measure to every parous woman.
3. The necessity for effective treatment in all cases of cervical laceration in which there is chronic infection or erosion should be recognized.
4. The potential malignancy of the cervical mucous polypus should be realized.

PHYSICAL THERAPY IN OTOLARYNGOLOGY.¹

By ERIC GUTTERIDGE, M.D., D.L.O., F.R.C.S. (Edinburgh),
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HERTZIAN short-wave diathermy is a therapeutic procedure with oscillatory currents of high magnitude obtained from condenser field circuits capable of effecting deep and selective heating of tissues by polarization or displacement phenomena. A high output or wattage is essential. Biophysical actions occur in such condenser fields: mice are killed by hyperpyrexia, alkalinized water is emulsified with paraffin, oil heats to 65° C. (150° F.) with escape of steam. Blood in a three-metre field heats to 57° C. and the serum heats to 47° C. Diphtheria antitoxin is neutralized. Jorus states that phagocytosis may be stimulated as the result of a specific action on the serum proteins.

Thermopenetration, greater in short-wave diathermy than in ordinary diathermy, is more powerful in the deeper tissues; the bones and muscles and the subcutaneous tissues have the lowest temperatures. The reverse effect is attained in diathermy.

The circulation in the web of a frog's foot showed, after a preliminary contraction, a dilatation of capillaries, arterioles and venules up to ten times their normal size, with acceleration of the blood stream. Clinically, suppurative and non-suppurative lesions of the skin, such as furunculosis, carbuncles, cellulitis and eczema, show the best results (Hollender). The deep heat and sustained active hyperaemia, with its increased oxygenation and phagocytic powers, reduce stasis, increase the local defensive mechanism and relieve pain.

Air-spaced electrodes are preferred; rubber condenser electrodes are also effective in deep-seated conditions, such as acute and chronic catarrhal conditions of the chest. Infra-red radiations, by means of a 260-watt carbon filament lamp, a 1,500-watt tungsten filament lamp or the commercial infra-red lamp, cause active local hyperaemia to a considerable depth of the tissue. The primary radiation appears to be chiefly absorbed by the subcutaneous tissues, which radiate secondary rays with longer wave lengths, and so greater penetration. The secondary rays are in turn absorbed by tissues which emit tertiary rays, and so on until all the energy is absorbed. The most penetrating rays are in the vicinity of the visible red portion of the spectrum and the adjacent invisible infra-red rays.

Radiation increases the volume of blood to the part, and its rise in temperature speeds up the protective agencies. Chemical reactions are greatly increased. More oxygen is supplied, fermenters act more efficiently, immunizing substances have greater affinities. More white cells arrive and they are more actively phagocytic. There is a general rise of the body temperature. Applications of hot air, hot

water, poultices or hot salt are not only difficult to manage and cool off rapidly, but they transfer heat to the skin by conduction without deep penetration. Whatever does penetrate is rapidly carried off by the cutaneous blood stream.

The indications for photothermic (infra-red) therapy are inflammatory conditions (acute or chronic) in tissues, such as the various types of rhinitis, frontal and maxillary sinusitis and *otitis media*.

Ultra-violet irradiation by the carbon-arc lamp and the air-cooled quartz mercury lamp has a penetration of the skin or mucous membrane never greater than two millimetres; the action is local, and proceeds from an erythema through vasodilation to blistering (as in sunburn). Tissue stimulation and germicidal and cytoidal effects occur. General ultra-violet irradiation activates ergosterol in the skin cholesterol and renders it antirachitic; it increases the calcium and phosphorus content of the blood, its haemoglobin content and its erythrocytes, and increases the bodily resistance toward infection. It is almost specific in rickets, tetany and osteomalacia, and it is valuable in many forms of extrapulmonary tuberculosis, especially in children, and in selected cases of chronic pulmonary tuberculosis.

Local irradiation by quartz applicators is widely used in the treatment of skin diseases. The application of these physical therapeutic methods to diseases of the ear, nose and throat demonstrates their value as ancillary measures.

The Common Cold.

Acute coryza (the common cold), according to Dochez and his co-workers, is due to an ultra-microscopic virus with secondary infection by staphylococci, streptococci and pneumococci. In the initial stage, marked by sudden congestion of the capillaries of the nasal mucosa, watery acrid discharge and sneezing, an application of a suberythema dose of ultra-violet rays by means of a nasal quartz applicator applied to both nares, may abort the attack by its direct destructive effect upon the virus; a general irradiation of the head and chest is also advisable. "Titrol" inhalations and instillations of ephedrine can be augmented by daily infra-red radiation directed towards the face.

In the stages of microbial invasion with increased infiltration of the mucosa and more profuse mucopurulent and purulent secretions, watery astringent sprays or tampons, or oily solutions of ephedrine, menthol and eucalyptol are indicated, supplemented by suction irrigation. The use of the infra-red lamp is continued until the nasal discharge has ceased.

Sinusitis.

In acute sinusitis, when, owing to the virulence of the bacterial infection, to inadequate drainage of the sinuses and to deficient general resistance, the mucosa has become swollen and infiltrated and the ostium has become obstructed, pus accumulates in the sinus, accompanied by headache, tenderness and rise of temperature. As an adjunct to general

¹ Read at the fifth session of the Australasian Medical Congress (British Medical Association), August, 1937.

treatment (lavage of the antrum and shrinkage of the mucosa in the region of the ostium) infra-red radiation is valuable; prolonged radiation carries the heat to deeper tissues with a pronounced photothermic effect. Daily treatments are essential. Long-wave diathermy in the presence of pus in a closed cavity is contraindicated, but short-wave diathermy can be used with good effect after a preliminary antral lavage and shrinkage of the mucosa. One air-spaced electrode upon the frontal or maxillary region forms a condenser field to the second electrode in the occipital region.

Chronic sinusitis may be divided into several types. The first is sinusitis in children with no demonstrable allergic skin reactions; the mucosa is variably swollen and opaque to X rays, and frequent reinfections occur. Diet, hygiene, adenoidectomy and tonsillectomy are supplemented by irritant and antiseptic nasal sprays. Drainage of the antra by pernasal antrostomies achieves ventilation of the sinuses, but there is a tendency to reinfection with the next acute coryza. Short-wave diathermy, with its congestive active hyperæmia, finds here its most valuable field.

The second type of chronic sinusitis is catarrhal sinusitis in adults, with a mucopurulent discharge and no radiological evidence of greatly thickened mucous membrane. The defences of the Schneiderian membrane are three in number: (i) The mucous gland secretions form a carpet over the mucosa in the sinuses and nose; this moving floor is in continual motion towards the nasopharynx, and enfolds and inhibits the bacteria drawn into the nose by respiration. (ii) The forest of cilia covering the active portion of the nasal mucosa and the whole of the surface of the sinuses beats at 250 cycles per minute toward the ostia of the sinuses and back toward the nasopharynx; by this metachronic beat the mucous carpet moves four millimetres per minute. (iii) The histiocytic reaction of the submucosal stroma forms the second line of defence; the histiocytes, endowed with phagocytic powers, (a) remain in the tissues as fibroblasts and carry out the work of fibrous repair, or (b) migrate through the epithelium attached to their captured bacterium, or (c) are carried off by the lymphatics.

The indications for treatment are the restoration of the nasal cavity to a state of adequate drainage by shrinkage of the submucous tissue and by removal of obstructing structures, as by septal resection, to restore ventilation of the sinuses. The mucous glands are stimulated by the use of menthol and eucalyptol in weak solutions (not more than 0.5%). Strong solutions paralyse the important ciliary action. For the same reason any aqueous solutions should be isotonic. The general health of the patient is investigated and vitamins are prescribed.

Short-wave diathermy affords a mechanism of producing a direct action on the mucosa and submucosa of the nasal cavities and sinuses. The active hyperæmia and increased phagocytosis are a valuable aid in restoring the mucous membrane to normal. Ten minutes' treatment is required every

second or third day for eight treatments. Ten patients of this type reported great improvement and cessation of discharge.

The third type of chronic sinusitis is that accompanied by purulent or mucopurulent secretion and radiological evidence of mucosal oedema or fibrosis. Hollender states that short-wave therapy is useful, particularly after conservative drainage of the sinuses. Three patients were treated. One, whose condition was comparatively recent, showed a loss of minor radiological shadows in the antra and a cessation of the nasal discharge, while two others with fibrosis of the sinus mucosa received no benefit and required removal of the mucosa.

Chronic Rhinitis.

In chronic rhinitis of allergic origin, with or without secondary bacterial infection, there is oedema of the membranous tissues characterized by eosinophilic infiltration. In the absence of a positive skin reaction for an offending allergen, intranasal ionization has been advised. Zinc sulphate (2%), zinc chloride (3%), and copper sulphate (0.25%) have been tried. One to four treatments are necessary (Hollender). There results histopathologically a pronounced infiltration of small and large lymphocytes, progressing to subepithelial fibrosis. The surface epithelium of the nasal mucosa shows a destruction of the cilia and a metamorphosis to stratified squamous cells. The cilia apparently never regenerate. With the recent investigations on the significance of ciliary function McMahon fears that the defensive mechanisms of the nasal mucosa will be diminished. However, Hollender states that no harmful clinical effects have been observed one to ten years after ionization.

Other Conditions.

Patients with acute myringitis and catarrh and acute otitis are benefited by infra-red radiation in association with the usual surgical measures.

As regards chronic *otitis media*, zinc ionization is indicated as a preliminary treatment to the subacute or chronic discharging ear with a large perforation, and to the mastoid cavity in which the epithelial lining has been destroyed by accumulations of cerumen or débris or by infection. In laryngeal tuberculosis ultra-violet irradiation is useful for its palliative and curative effects in extensive ulcerations and as a post-operative aid to cauterization; applied locally with a quartz applicator, it produces an erythema with subepithelial fibrosis.

General ultra-violet irradiation in non-febrile patients is helpful in building up the body resistance.

Conclusion.

In conclusion, physical therapy by short-wave diathermy—infra-red and ultra-violet phototherapy and zinc ionization—is useful as an addition to the recognized forms of topical and surgical treatment. Short-wave diathermy and phototherapy facilitate a direct attack upon the nasal mucosa and submucosa, leading to regeneration when the infection is of minor degree.

ADHESIONS IN AND AROUND JOINTS.

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AN adhesion is produced by an organization of fibrinous material whereby the latter is replaced by fibrous tissue; the process is that of repair, with the usual stages of granulation tissue *et cetera*.

The Causes of Adhesions.

The causes of adhesions in and around joints are as follows: fractures near joints; suppuration near joints; stub blows; dislocations; sprains; prolonged immobilization, especially in a position of strain; infection; œdema; continuous mild trauma, especially associated with mild infection from a septic focus; continuous irritation of a foreign body near a joint.

It is not necessary to have an injury to cause adhesions in and around joints; some mild infective process *plus* some other factor, such as continuous mild trauma or exposure to cold, is sufficient to bring about changes consisting of a localized area of œdema, a precipitation of fibrin and then the final adhesion.

Adhesions may be intraarticular, capsular or periarticular. In the first type there must be some erosion of joint cartilage; this will be revealed by X ray examination. The commonest causes of this type of adhesion are stub blows, with contusion of the cartilage, a mild septic arthritis, or a fracture into the joint. The other types can be produced by any of the above-mentioned causes. It should be remembered that the term "periarticular" embraces the muscles and tendons.

The process of the formation of adhesions is as follows: an injury is sustained and there is a loss of tone in all the vessels of the part, at first due to an axone reflex, later to disuse; œdema, infiltration and venous stasis occur; fibrin is poured out and repair takes place. Adhesions form early as a result of this repair; in the initial stages they are vascular and naturally tender. If at this period passive stretching or manipulation is instituted a further injury is produced and the cycle repeats itself. The constant trauma of passive movements at this stage very likely will produce arthritis, and the attempts to restore movement will result in more stiffness. It may be as well at this point to enunciate a principle: "Rest a joint while tenderness is marked or diffuse." This is merely an application of Hilton's law.

Symptoms and Signs of Adhesions.

There may or may not be a story of injury. In the former case the symptoms appear comparatively soon after the injury, while in the latter there may be evidence of past infection or nothing beyond the gradual or even sudden onset of symptoms.

Pain.—If there has been an injury, the pain as a result of this will dominate the picture; but when the adhesions are well established the main complaint is that of discomfort, which becomes a severely sharp pain on certain movements only. This pain has one significant point about it—it disappears after a few minutes' rest. Changes in the weather frequently cause an aching of the part. Weight-bearing does not cause pain, unless it happens to put the adhesions on the stretch; this means that the patient can sleep on the affected side at night if the joint involved happens to be the shoulder.

Stiffness.—The symptom of stiffness also has a behaviour of its own in these cases. It is most marked after rest and diminishes with use; in other words, the range of painless movement increases with use. There is, however, a certain stiffness of the joint for certain movements at all times.

Swelling.—During the earlier stages swelling is generalized and constant; later, when the adhesions are organized, the swelling is more frequently localized and tends to be intermittent.

Tenderness.—During the stage of vascularity tenderness is diffuse; but later it is confined to the bony attachments of the adhesions.

Examination.—Besides the above-mentioned signs and symptoms the examiner will notice three important points: (a) the joint feels colder than normal; (b) there is freedom of movement in every direction, except where it is limited by the adhesions; (c) when the adhesions are put on the stretch pain is caused, and this occurs in the same spot each time the particular passive movement is carried out. This point is remembered by the following phrase: "The same pain, in the same spot, on the same movement."

Differential Diagnosis.

The main condition from which adhesions must be distinguished is arthritis; and by arthritis is meant an inflammation of the joint from any cause. The history may not be of much help; but it should be remembered that traumatic arthritis does not declare itself as such for two or three weeks after an injury. This is of particular importance when the shoulder joint is involved. Pain in arthritis is constant and can be relieved only by prolonged rest. Another distinguishing feature as regards pain is the sudden stab caused by an unguarded movement; in arthritis the pain produced by such a movement does not subside for a considerable time, whereas, if adhesions are the cause, it disappears after a few moments' rest. Weight-bearing causes pain in arthritis, and, if the shoulder should be involved, the patient cannot lie on the affected side at night.

The stiffness of the joint in arthritis behaves in just the opposite manner to that in adhesions; the range of painless movement diminishes with use, and the joint is at its best after a night's rest.

In arthritis swelling is present all the time and tenderness is more prominent. On examination

there are three features to be noted in arthritis, and they are just the opposite to those associated with adhesions: (a) the joint is hot to the touch, (b) there is limitation of movement in every direction, (c) attempts to force any movement of the joint will cause muscle spasm and pain.

The other condition which must be considered is over-use of a muscle or set of muscles. The diagnosis of this condition will rarely cause difficulty. The pain and stiffness commence only after continuous use; there is complete relief from all symptoms immediately on resting, and there is no loss of movement in the joint.

Reports of Cases.

The following notes are of two typical cases of adhesions.

Case I.

B.W., a boy, aged twelve years, had septic arthritis, sero-fibrinous in type, of the right knee joint, in January, 1935. The knee was aspirated and injected with ether, then immobilized on a Thomas's splint for six weeks. At the end of this time there was no tenderness, so movements were instituted in bed. At the end of another fortnight he was allowed up. Thomas's test of soundness was applied. The range of movement increased and he was discharged from hospital. Ten months later he returned, with the history that his right knee used to swell every ten days or so, but subsided after a few days' rest in bed. There was no pain beyond a sensation of tightness, with discomfort, during the periods of swelling. At this time examination disclosed some thickening of the synovial membrane, wasting of the quadriceps muscle, and free movement of the joint to a right angle. X ray examination revealed no abnormality.

Diagnosis: Capsular adhesions of the right knee joint.

Treatment: Manipulation of the knee under anaesthesia.

Result: Rapid subsidence of the synovial thickening, restoration of full movement and no further swelling of the joint.

Case II.

J.H., a male, aged thirty-two years, twisted his left knee while walking downstairs. Three days later the knee was swollen and he painted it with iodine. The swelling subsided; but some stiffness of the joint remained. There were occasional puffiness and a pain localized to the back of the joint on descending stairs or walking down hill. On examination the left knee was found to be only slightly swollen; there was tenderness over the capsule postero-externally, and the last few degrees of extension could not be obtained. There was complete recovery after manipulation under anaesthesia.

In both these cases there was some thickening of the synovial membrane. Such a finding is common in chronic synovial effusion and does not necessarily mean that infection is present; but if the joint is hot to the touch, care should be exercised. If adhesions are present there will be limitation of one or more movements, and forcing these will always cause the same pain in the same spot.

The principle is that if the last few degrees of movement in a joint are limited, in the absence of heat, manipulate, in spite of a thickened synovial membrane.

Adhesions in the Back.

By some sudden forceful movement a patient tears some muscular or aponeurotic fibres in the back; he is incapacitated, the injured part is

strapped and rest is ordered. The acute pain soon passes off; but he still suffers pain on passive stretching or active contraction of the muscle against resistance. At first there is pronounced tenderness over the injured area. Gradually this subsides; but deep pressure will find a sore spot as long as the adhesions are present. The same applies to the joints in the axial skeleton; yet it must be appreciated that it is very difficult to differentiate between a lesion in the intricacies of the muscles of the back and lesions of the joints themselves. Adhesions in joints tend to limit movements in one direction only, and therefore should cause pain only when put on the stretch; while a lesion in the muscular mass will behave as mentioned above. This distinction is of no practical importance in the later stages, when the adhesions are organized, because the treatment is the same in both instances. To prevent the formation of these painful adhesions is very difficult; prevention resolves itself into ordering active movements at the right time, before the adhesions are too well organized to stretch, and after the inflammatory stage has passed.

There is another common type of adhesion in the back. A patient is carrying out some simple movement; he may even be getting out of bed in the morning, when he is suddenly struck with a sharp pain which is localized generally to the lumbar region of the back. The osteopath assures us that such a patient has a slight dislocation; possibly he has. But the probable lesion is an incomplete tear of an adhesion which has formed as a result of some low-grade infection; the fact that most of these injuries respond to treatment by manipulation, even in the early stages, tends to support this view. The same principles govern the management of these cases as any others in which there are adhesions: rest if there are signs of acute or diffuse tenderness, manipulation if there are not. The bulk of these patients suffer from recurring attacks of their complaint and eventually have spondylitis, the X ray changes of which are not a bar to manipulation. In these latter cases it is wiser not to use an anaesthetic. Sir Herbert Barker, whose reputation as a manipulator is widespread, never uses an anaesthetic to manipulate a spine.

Prophylaxis.

In the great majority of cases adhesions can be prevented after an injury by the application of the principles enunciated by Sir Robert Jones: (i) to allay all inflammatory symptoms by rest; (ii) to obstruct local effusion of blood by pressure; (iii) to massage the injured structures early; (iv) to encourage active movements, early precautions being taken, however, to avoid over-stretching of torn structures; (v) to encourage early active function; (vi) to protect torn structures from the strain of body weight; (vii) to prevent oedema.

Treatment.

Once adhesions have formed the rational thing to do is to break them down by manipulation under

general anaesthesia; but there is a right way as well as a wrong way to do this.

1. A skiagram should always be made to rule out a more serious lesion.

2. Manipulation must be delayed until the adhesions have had time to be organized. We know from practical experience that it takes eight to twelve weeks for the fibrous tissue to become completely organized, and not till then is it safe or wise to manipulate.

3. If the adhesions are known to be intraarticular the surgeon must go slowly and endeavour to obtain a small increase of movement at a time. This resolves itself into Thomas's test of soundness. By this is meant that if, after manipulation, the range of movement in a joint does not diminish with use, that joint is sound and the treatment can safely be continued.

4. An elbow joint or fingers should never be manipulated. This is a golden rule which even the better bone-setter knows and observes.

5. The joint is put through its complete range of movement once, and once only, if the case is one of simple capsular or periarticular adhesions. Never use pump-handle methods.

6. The aim is to break down adhesions, not to tear the normal structures of the joint.

7. Before the patient leaves the theatre the limb is placed in the newly acquired position and left there until the patient has recovered completely from the anaesthetic.

8. Early active movements after manipulation are to be encouraged; but appropriate rest should be given if there is a severe reaction. If effusion should follow the manipulation there is no cause for alarm; it means in all probability that an intraarticular adhesion has been broken down. In such an event one is guided in the after-treatment by the joint's reaction. Rest should be given for a day or so, then active movements prescribed. If the range diminishes with use, rest is indicated; if there is pain, but the range of movement increases, it is generally safe to continue with the active movements. The type of pain, however, must be considered; if it is sharp and momentary it is of negligible importance, but if it is continuous complete rest must be ordered.

At the time of manipulation it can be anticipated whether the treatment will be a success or not, especially in the case of the shoulder joint. If the adhesions give with a definite snap the prognosis is excellent; if they yield with a crunching sound the result will not be so good. In the latter instance manipulation has been undertaken too soon or the wrong case has been chosen. A word of warning may be issued here: care must be exercised not to mistake the fracture of the patella for the breaking down of a large adhesion during manipulation of the knee joint. The patella is easily fractured, and it is incumbent on the operator to see that this bone is recalcified and mobile before he attempts to restore movement to the knee joint. When in doubt

he must proceed carefully and restore a little movement at a time.

Summary.

1. An attempt has been made to describe clearly, yet concisely, what an adhesion is, the main causes, and the sites in relation to the joint.

2. The main points in the diagnosis have been given, and the principal features which distinguish arthritis from adhesions have been mentioned.

3. The notes of two typical cases are added.

4. Adhesions in the back have been dealt with briefly under a separate heading; but the same principles of diagnosis and treatment pertain here as in any other part of the body.

5. The principles rather than details have been given for prophylaxis and treatment.

MIGRAINE FROM THE ALLERGIC VIEWPOINT: RESULTS OF TREATMENT IN 105 CASES.

By CLIVE SIPPE, M.B. (Sydney), M.R.C.P. (London),
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The suggested causes of migraine have been legion, and undoubtedly many factors frequently combine in the same person to precipitate the attacks. The purpose of this contribution is not to summarize these, but to report the results of allergic treatment in 105 consecutive cases. It has long been recognized that migraine is an hereditary ailment and that there is a definite migraine diathesis; recent work suggests that this hereditary factor is the allergic element, just as has been long recognized in asthma.

As Critchley⁽¹⁾ pointed out, it is far better not to confine the term "migraine" to such a fixed symptom complex as has been previously described in text-books. It is now well recognized that headache is not necessarily unilateral, preceded by aura or accompanied by abdominal symptoms, and that abdominal symptoms may occur without headache. Furthermore, there is no doubt that many recurring or even non-syndrome dyspepsias belong to the group of gastro-intestinal allergy.

Periodicity is a feature of the attacks, the intervals of freedom varying from many months to a day or two. Frequently after a number of years the intervals of freedom become shorter and shorter, till finally the headache becomes constant—a development which appears to be analogous to *status asthmaticus* occurring in an asthmatic subject.

Observations suggest that possibly allergic symptoms depend on retention of water in the tissues. The tissues generally become water-logged, with special concentration in selected sensitized areas, such as the nasal mucosa in allergic rhinitis and the cerebral tissues in migraine.

The point which drew attention to this possibility was the fact that those patients who greatly

improved rapidly lost several pounds in weight after diet adjustments. After this preliminary loss the weight then tended to remain stationary so long as improvement was maintained. This loss did not appear to be due to under-nourishment resulting from anorexia, as in some cases in which this occurred the loss was more gradual and sustained.

This suggested that there was a rapid mobilization and excretion of water from the system, leading among other things to decrease of intracranial tension.

Black and Braden⁽²⁾ have reported that in artificially induced hay fever there is an increase in blood concentration, showing that approximately 3·5% of the fluid portion of the blood left the vessels immediately on the onset of nasal symptoms, causing an increase in the tissue fluid. This, they state, is similar to the concentration which occurs in the anaphylactic guinea-pig. Dzinich and Paul⁽³⁾ also state that in allergic diseases the lesion is an oedema wherein water enters the tissues and is bound there.

Wiggers⁽⁴⁾ makes the following statement:

With the demonstration by Weed and Hughson that the volume of cerebro-spinal fluid and intracranial pressure are inversely related to the tonicity of the blood, the possibility that increased water retention and hypotonicity of the blood following intestinal stasis, constipation or renal affections may lead to increased intracranial pressure becomes plausible, and particularly so as headache frequently disappears soon after great elimination of water either by free diuresis or purgation.

In view of the postulation of water retention as the basic cause of allergic symptoms, the relief sometimes noticed in attacks of migraine by copious draughts of water first thing in the morning appears contradictory. The fluid is taken on an empty stomach; and as Wiggers⁽⁵⁾ points out, a certain volume of water taken under these conditions stimulates diuresis. Frequently the end-result is that the system may be left with less fluid than before the drink was taken.

Rowe⁽⁶⁾ was one of the first to demonstrate the beneficial effects of thorough and painstaking allergic treatment of migraine.

This series contains many patients in whom headache had been constant for weeks, although in the majority the attacks at some stage had been of a cyclic nature. Usually either nausea or vomiting had occurred. Each case has been thoroughly investigated in order to eliminate possible contributing factors. Careful tests of visual acuity and nasal examinations have been carried out in the majority. Glasses were prescribed if necessary, although the majority had already eliminated the eyes as a possible cause. Not one of this series was relieved of the attacks by the use of glasses, although I do not deny that refractive errors can cause migraine. Sinus disease, I believe, plays practically no direct part in the production of the attacks, although the existence of a septic focus may turn the scale against the patient where the balance between well-being and ill-health is close.

Diagnosis.

As regards diagnosis, investigation and food diaries will occasionally give a clue to the offending foods. Skin tests performed by the intradermal method are a good guide for the initial diet, especially if notice is taken of doubtful and delayed reactions. The leucopenic index, whereby the effect of a particular food on the leucocyte count is recorded, gives useful information, but needs much time and care. Normally food causes a rise in the leucocyte count, but food to which a person is sensitive will cause a drop of a thousand or more in the count. I have employed this method with benefit in a few selected cases.

Table I indicates the order of frequency of positive skin tests which I obtained in a series of cases of headache and gastro-intestinal manifestations of allergy.

TABLE I.

Food Tested.	Number of Tests Performed.	Percentage of Positive Reactions.
Banana	107	96·0
Egg white	199	79·4
Tea	194	54·0
Oatmeal	188	51·0
Pea	184	46·7
Milk	198	40·9
Pineapple	118	34·7
Potato	195	22·6
Pork	199	14·1
Beef	195	12·3
Fowl	195	12·3
Wheat	199	7·5
Fish	188	7·4
Lamb	196	5·6
Bean	181	3·0

Chocolate and onion, although not appearing on this list, are undoubtedly frequent offenders.

The results of these skin tests performed by the intradermal method agreed very closely with clinical findings. No test should be regarded as a complete diagnostic factor; and in my opinion skin testing in food allergy ranks high as compared with tests in most other diseases when it is used as a link in the chain of evidence.

Elimination diets, as suggested and described by Rowe, are also at times very useful.

Treatment.

Complete elimination of the offending food is the most certain way of obtaining relief. When this is not possible peptones have sometimes given relief. I have found no benefit from using small amounts of the offending food, such as are contained in various proprietary preparations, shortly before the meals. I have not often tried desensitization by injection, but oral desensitization is certainly useful in a few cases. Mild sensitivity can sometimes be overcome by alteration of the substance concerned, for example, by boiling milk for ten minutes or by toasting bread.

Results.

In assessing results I have considered as cures those patients completely relieved for six months or longer. Partial relief implies great reduction in

number and especially in severity of attacks. Frequently in this group the attacks become so mild as not to necessitate the use of analgesics, or else simple drugs of the aspirin type give relief where nothing gave relief previously. In other words, even this group means the relief of the disability usually accompanying severe migraine.

The third group implies anything less than mentioned in the second group.

The results in 105 cases are shown in Table II.

TABLE II.

Result.	Number of Patients.	Percentage.
Cured	65	61.9
Relieved	24	22.9
Failure	16	15.2

Thus it will be seen that in 84.8% of cases either complete relief occurred or else the attacks were reduced to such a degree as to cause no serious disability.

In the majority of cases the attacks had been present from childhood; in no case was the history of less than several years' duration. The ages ranged from eight to seventy years, the majority falling between thirty and fifty.

The sexes were as follows. The percentage of females was 63.8 and that of males 36.2. The percentages of relief in these two groups were 88 in females and 84 in males, showing that the relief in both groups is about the same.

Discussion.

I have noted that a common type of headache occurring in food allergy is that which appears on waking or on rising in the morning, and is associated with sneezing or a stuffy nose. It is of a throbbing nature, located in the frontal or occipital region. With experience a more careful selection of cases brings a higher percentage of cures. The highly nervous patient usually does not do well, although some of my best results were obtained in this group; so that treatment is worth a trial, even at the risk of spoiling statistics. If the attack occurs only with menstruation it appears to be rarely due to food allergy, although if it occurs at other times as well the attacks will usually respond to this treatment.

Summary.

1. Evidence has been produced to support the view that migraine is frequently an allergic manifestation.

2. The results of allergic treatment in 105 cases of long-standing migraine indicate cure in 61.9%, partial relief in 22.9%, and failure in 15.2%. More careful selection can increase the percentage of cures. These figures are far in advance of any previous type of treatment.

3. Methods of treatment have been described.

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A NOTE ON THE EFFECT OF THYROXAMINE ADMINISTRATION ON AN IMPLANTED TUMOUR OF THE MOUSE.

By WARNFORD MOPPETT,
Sydney.

In a previous paper⁽¹⁾ it was noted that thyroxin may under certain circumstances retard the growth of the mouse tumour S 37. Preliminary results with a derivative, thyroxamine, were also recorded, and further work was suggested. Thyroxamine was chosen because Gaddum⁽²⁾⁽³⁾ suggested that it might have certain properties of embryonic organizers in causing metamorphosis of tadpoles, whilst it might not stimulate metabolism on injection into the animal.

The preliminary results were first amplified by the injection of thyroxamine into further groups of animals bearing the implanted tumour. Following the previous technique, one cubic centimetre of a 1 in 10,000 dilution (partly in solution and partly in suspension) of thyroxamine hydrochloride in saline solution was given subcutaneously five days after implantation of the tumour, when the growth was just palpable. This dose was repeated at the eighth and eleventh days respectively. The tumours were shelled out and weighed on the fifteenth day. A control series was treated in the same way, the drug being replaced with saline solution.

Omitting details, which were similar to those of the previous paper, the average weight of twelve tumours from thyroxamine-treated animals was 1.9 grammes, whilst the average of tumours from twelve controls was 1.5 grammes. The difference was not significant, owing to the variability of tumour growth. The previous results⁽¹⁾ in ten experiments were 1.66 grammes and nine controls 2.17 grammes; but this difference was not significant. Taken together, the results mean that the three injections of thyroxamine had no effect on tumour growth within the accuracy of the experiment.

Since in general an implanted tumour can be made to regress much more easily than a spontaneous tumour, it is assumed that any form of experimental therapy which does not give a clear result with the above numbers is unlikely to be of any practical value.

Examination of the thyroxamine used in the previous experiments cast doubt upon its purity, the substance being probably contaminated with partially iodinated thyronamine. A very pure specimen was fortunately made available and the solution (partly suspension) of its hydrochloride was tried on a new series of tumour-bearing animals.

Previous results with thyroxin indicated that a single dose of 0·1 milligramme was more effective in retarding tumour growth than more intensive treatment with repeated doses.

It appeared that thyroxamine would have an effect lasting for several days, like thyroxin, and accordingly in the following experiment a single dose of the very pure thyroxamine hydrochloride (0·1 milligramme in 1·0 cubic centimetre) was given five days after implantation of the tumours.

The average tumour weight in eleven treated animals was 1·29 grammes, whilst in fourteen controls it was 1·46 grammes. The difference is not significant. As before, any effect must be small and, therefore, unlikely to be of practical value.

Discussion.

It is possible that under certain conditions thyroxamine may stimulate metabolism, and it would then have an effect analogous to that of thyroxin on injection. Moreover, it is questionable whether one should not regard the action of thyroxin in accelerating amphibian metamorphosis as an example of the general stimulation of metabolism rather than a more specific "organizer" action. Considering the present result in relation to recent literature, it does not appear profitable to investigate other derivatives of thyroxin in relation to the experimental therapy of tumour-bearing animals.

Acknowledgements.

I wish to thank Professor C. G. Lambie and Dr. V. M. Trikojus, of the Department of Medicine, University of Sydney, for facilities for carrying out this work.

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Reports of Cases.

TWELVE MONTHS OF SYCOSIS BARBÆ.

By CHARLES E. JELHART,
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I REPORT the following case because (1) of exceptional facilities for following its course and (ii) of the well-known difficulty of curing or even controlling sycosis, especially in the country, where radiotherapy is not available.

The patient, a man, aged fifty-seven years, had had a suspicious lymphocytosis, but had been adequately treated by X rays and was now in apparently good health. In October, 1936, he noticed a tiny papular eruption on the upper lip which he imagined to be herpetic in character; he refrained from active treatment. After two weeks he sought advice, and, seeing that the lesion was slightly pustular, I ordered ordinary antiseptic lotions and oint-

ments. These had little or no effect. The lesion actively spread laterally and even up to the cheek, causing œdema of the lower eyelid, and on my advice he went to the city, where the eruption was diagnosed as *sycosis barba* due to *Staphylococcus aureus*, and repeated doses of X rays were ordered. After several visits the ulcerated area was reduced to a spot, five millimetres in diameter, on the side of the nose.

The eruption now entered on a fresh phase of activity and spread over the right side of the nose. Strips of flesh-coloured "Elastoplast" were worn to minimize the disfigurement and to allow the free discharge of serum between the strips.

After nine visits to the city twelve months had elapsed, and, though radiotherapy had proved most helpful, there remained a spot as large as sixpence extending from nostril to lip edge.

The patient was now weary of travelling and I began to use a paint, a variant of that recommended by Ingram⁽¹⁾ some years ago:

Cupri Sulphatis	1·0
Zinci Sulphatis	1·5
Acidi Carbolic Liquidi	3·5
Aquam ad	100

The first day many paintings were applied and a thick, hard scab formed over most of the area and toxic absorption was notably lessened; this augured well, and the painting, especially to the more active edge, was continued, causing definite retrogression and cure in two and a half weeks.

Though susceptibility to the infection remained (due possibly to an abnormal blood picture), the following recurrences were successfully dealt with, and now quite adequate control appears to be established.

The first recurrence was a small one at the original site. It was suppressed in early ulceration by means of the paint described above.

Three weeks later there was a fulminating recurrence on the lower lip, growing in forty-eight hours from a tiny pale spot to more than a square centimetre of sodden and whitened epithelium, with free discharge of serum and considerable discomfort and swelling. Very assiduous application of the paint (twenty times a day) practically obliterated the process in a further forty-eight hours and left a comparatively healthy scab. Healing occurred in two weeks.

Fifteen small foci appeared on the lower lip. These were torn open with a needle and the paint applied. A cure was effected after a spread of one square centimetre had occurred.

A large diffuse recurrence on the edge of the lower lip caused some trouble. The patient failed to use the paint adequately owing to the pain it caused. I therefore gave him an ointment containing equal parts of "Unguentum Quinolour Compound" (Squibb) and "Percinal" (Ciba) to apply continuously to the lip, especially during the night. There was gradual retrogression, and healing occurred in about a month.

The following observations are important in this case and may have a more general application.

1. All ointments proved useless in the active stages, owing to the very free serous discharge, which prevented actual contact with the lesion.

2. The paint forms a coagulum with the serum and this is more or less adherent and doubtless plays a part in producing a highly favourable result.

3. When the disease is most active, great frequency of application of the paint is necessary (say every half hour). The patient must get up at night and apply it two or three times between 10 p.m. and 6 a.m.

4. The patient should be provided with a concave mirror (for example, a frontal mirror), absorbent cotton, wooden matches and a small phial of the paint. Carrying these, he can apply the paint in two minutes at any time during working hours.

5. For raised and reddened patches, threatening a recurrence on the beard areas, rubbing in "Unguentum Quinolour Compound" every two hours appears effective.

6. Shaving at least every second day is necessary; but on the broken areas close clipping with scissors will suffice.

7. Epilation by X rays or other means appears unnecessary.

8. Should the sycoitic process stray towards the mucous membrane of the mouth or nose it is necessary to use the paint with caution, as it may cause necrosis and stimulate the disease itself.

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(¹) John T. Ingram: "Sycoitis Barbe", *The British Medical Journal*, October 5, 1929, page 620.

SYPHILITIC STENOSIS OF THE TRACHEA.

By C. G. LAMBIE,
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(From the Department of Medicine, University of Sydney.)

ALTHOUGH the trachea, particularly the lower third, is regarded as one of the sites of election of the *Treponema pallidum*, gummatus infiltration with subsequent cicatricial contraction and stenosis of the trachea has probably never been a common lesion. With the improvements in the treatment of syphilis which have taken place in the last two decades, together with the fact that syphilis is a disappearing disease, syphilitic stricture of the trachea has become extremely rare. It is therefore of interest to place on record a typical case presenting this condition.

Case History.

J.F., a woman, aged fifty-nine years, was admitted to the Royal Prince Alfred Hospital complaining of breathlessness, together with cough and expectoration, which had been present for twelve months; attacks of vomiting had also been present for three months.

The patient gave the history that she had felt perfectly well until February, 1935, when she noticed that whenever she became excited or did work of even moderate severity her breathing became noisy and somewhat laboured. She also suffered from a cough which was accompanied by much yellow-coloured expectoration. These symptoms became progressively worse. About August, 1935, the stridor, which had been present only on inspiration, was now also present during expiration, so that the breathing became continuously noisy. Although the patient was moderately comfortable at rest she was never quite free from breathlessness. In November, 1935, she began to suffer from attacks of severe breathlessness accompanied by "wheezing" and noisy breathing, which came on quite apart from effort. These attacks lasted sometimes for a few hours, sometimes for a day or two. They were usually worse at night, but might occur at any time during the twenty-four hours. At this time vomiting occurred frequently after food. She had not at any time experienced any pain, but since November, 1935, she had complained of a tight feeling behind the sternum, referred to a point opposite the fourth costal cartilage. She found that this sensation and the dyspnoea were relieved somewhat by bending the head and trunk forwards. During the attacks of dyspnoea she experienced a feeling of anxiety and suffocation, but she did not hold on to objects in order to aid her breathing. The voice had become somewhat weaker; otherwise there had been no interference with phonation. Since December, 1935, she had felt weaker and there had been attacks of palpitation and giddiness. Her appetite was poor. She complained of some delay and difficulty in micturition. Beyond slight insomnia, for which the dyspnoea was partly responsible, she had no other symptoms referable to the nervous system. There were no symptoms referable to any of the other systems.

The patient acknowledged having had a venereal infection twenty years previously, in 1916. She reached the menopause fifteen years previously. She had scurvy and

scarlet fever as a child, and influenza in 1925, but no other illnesses.

She had been married twice, but had had no children. She had had no miscarriages. Nothing relevant was elicited regarding the health of her relatives.

She lived at home in comfortable circumstances in healthy surroundings. She neither drank nor smoked and her diet was adequate.

The patient was admitted to the Royal Prince Alfred Hospital in January, 1936, with a provisional diagnosis of asthma.

Physical examination revealed an obese, middle-aged woman, lying in bed propped up by pillows and in obvious respiratory distress. She tossed from side to side trying to get into a comfortable position and she frequently sat up and leaned forward with the head bent in order to get breath. No cyanosis of the lips or ears was noticed, but the cheeks were somewhat pale and the face wore an anxious expression. The breathing was laboured and



FIGURE I.

the extraordinary muscles of respiration were active. The breathing was accompanied by stridor, which was present during both phases of respiration, but was most marked during inspiration. No clubbing of the fingers and no trace of oedema of the feet was seen. The cough was paroxysmal and had a slight metallic ring. Sputum was abundant, thick and yellowish-brown in colour. On microscopic examination it was found to contain large numbers of polymorphonuclear pus cells and numerous Gram-positive streptococci and non-chained coccoid forms. No tubercle bacilli were detected.

The chest was well covered. The antero-posterior diameter was almost as great as the transverse, and the subcostal angle was wide. There was no undue prominence of the sternal angle. The respirations were thirty per

minute and of small amplitude, expiration being somewhat longer than inspiration. The chest moved upwards and downwards as a whole, and there was some inspiratory inrawing of the abdomen and lower intercostal spaces. The vocal fremitus was just palpable and was equal on the two sides. The percussion note was resonant all over the lungs. It was difficult to define the borders of the lungs by percussion. On auscultation, the stridor could be heard both on inspiration and expiration all over the chest. It was most pronounced on inspiration and it was heard very well when the stethoscope was applied over the trachea in the neck and over the manubrium sterni. Numerous high and low-pitched, continuous râles could be heard all over the thorax. The breath sounds were harsh, vesicular in type over most of the chest, but broncho-vesicular in places over the base of the right lung. The vocal resonance was faint.

No palpable thickening of the vessel walls was present. The pulse rate was 100 per minute. The rhythm was regular. The systolic blood pressure was 140 millimetres of mercury and the diastolic 70 millimetres. The pulses were equal and synchronous. No capillary pulsation was observed.

The apex beat was visible in the fifth left interspace, 2·5 centimetres (one inch) inside the mid-clavicular line. No enlargement of the heart or aorta could be detected by palpation, percussion or X ray examination. The heart sounds were faint. No murmurs were heard and there was no accentuation of a second sound in the aortic area. No tracheal tugging was present, and there was no pulsation in the episternal notch. The vocal cords moved freely and equally.

X ray examination of the chest revealed signs characteristic of chronic bronchitis, but there was no evidence of the presence of any tumour or aneurysm. At the base of the right lung was a small area of consolidation.

The pupils were equal, small in size, and reacted sluggishly to light. The knee jerks were present, and the visual fields were normal. The difficulty and delay in micturition had already been noted. No other abnormal signs were detected on examination of the nervous system.

The other systems were apparently normal.

Both the Wassermann and the Kline reactions were strongly positive.

In view of these findings it was concluded that the patient was suffering from a syphilitic stricture of the trachea. This was confirmed by direct tracheoscopy, which revealed the presence of great œdema and narrowing of the trachea about 2·5 centimetres (one inch) above the bifurcation, where the lumen was reduced to a small slit running antero-posteriorly. I am indebted to Dr. Garnet Halloran for carrying out this part of the examination. No attempt was made to dilate the stricture.

The patient was treated with iodide, but this treatment was suspended owing to the development of iodism. She was then given injections of bismuth and of "Novarsenobillon", but without apparent benefit. In order to relieve the dyspnoea she was given sedatives, morphine and atropine, and oxygen. Finally, she contracted broncho-pneumonia and died.

Post Mortem Examination.

A post mortem examination was performed by Dr. G. S. Davies, pathologist to the Royal Prince Alfred Hospital, whose report was as follows.

Examination four hours after death.

The body is that of an elderly woman; rigor mortis has not set in, but hypostatic congestion is present.

Trachea.—At a point four centimetres above the bifurcation, and level with the summit of the arch of the aorta, there is a pronounced stricture of the trachea. The mucosa in this region is engorged, scarred and superficially ulcerated, and some destruction of cartilage is evident on palpation. A large amount of mucopurulent secretion is found below the stricture in the trachea and bronchi.

Lungs.—Broncho-pneumonia: most pronounced on the left side. The bronchi are inflamed and contain mucopurulent secretion.

Heart.—The heart is small (weight 250 grammes). The aortic valve cusps are slightly thickened, but the lunules are well defined. There is no thickening of the free borders of the cusps and the commissures are not widened.

Aorta.—There is thickening of all coats of the aorta in the ascending part and in the arch as far as the origin of the left subclavian artery. In this region the intima is thick, white and opaque, with some closely set wrinkles.

Other Organs.—Other organs exhibit no significant changes.

Microscopic Examination.

Trachea.—In the part sectioned in the posterior wall of the trachea there is no cartilage. Most of the superficial epithelium has been rubbed off, but the basal layer still remains. The subepithelial tissue is infiltrated by polymorphs and lymphocytes, but round the glands plasma cells are more numerous. Separating the bundles of smooth muscle fibres is a large amount of œdematosus and highly vascular fibrous tissue which contains many foci of lymphocytes and plasma cells with polymorphs becoming more numerous as the mucosa is approached. At one point, near the outer part of the wall, is a small collection of giant cells with nuclei mainly arranged round the margin. There are no other endothelial cells round these and a follicular structure is not seen, but polymorphs, lymphocytes and fibroblasts separate the giant cells. In another section of the trachea similar groups of giant cells, associated with other inflammatory cells, are found between the large muscle bundles of the posterior tracheal wall.

Aorta.—In the part of the aorta sectioned the intima is slightly thickened, but is diffusely infiltrated by lymphocytes and occasional polymorphs. In one part of the media there is a well-defined necrotic zone in which the original tissue outlines can still be seen, though selective staining is lost. Near this there is perivascular cellular accumulation round dilated *vasa vasorum*, in the media. The adjacent adventitia is very thick and fibrous, with perivascular accumulations of lymphocytes and plasma cells.

Acknowledgements.

I wish to thank the Department of Medical Artistry, University of Sydney, for the illustration.

Bibliography.

P. Kidd: "Syphilitic Disease of the Trachea", *The Clinical Journal*, Volume IX, 1896, page 153.

Notes on Books, Current Journals and New Appliances.

A HANDBOOK OF MEDICINE.

The first edition of "Wheeler and Jack's Handbook of Medicine" was published in February, 1894. Since that time editions have appeared at regular intervals; the tenth edition has now been published.¹ This edition has been revised by Dr. John Henderson, physician of the Royal Glasgow Infirmary and Professor of Medicine at St. Mungo's College, Glasgow. Dr. Henderson states in the preface that the book is merely a hand-book and that no attempt has been made to convert it into a text-book. As a book which may be useful to students preparing for final examination this work will probably be suitable. It is a pity, however, that "cram" books should be necessary. If the student does use them he should always have at his elbow a complete text-book to which he can refer when he has acquired the outlines of a subject.

¹ "Wheeler and Jack's Handbook of Medicine", revised by J. Henderson, M.D., F.R.F.P.S.; Tenth Edition; 1937. Edinburgh: E. and S. Livingstone. Crown 8vo, pp. 719. Price: 12s. 6d. net.

The Medical Journal of Australia

SATURDAY, MAY 21, 1938.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

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THE PUBLIC HEALTH IN NEW SOUTH WALES.

THE annual report of the Director-General of Public Health for New South Wales is always an interesting document. The report for the year 1936, received in February, 1938, is no exception. It is a pity that the report for 1936 could not be ordered to be printed before December 13, 1937, but unfortunately the latent period for the issuing of official reports in Australia always seems to be long. As a result of the delay the public has in all probability forgotten all about an important event in the sphere of public health by the time official comment on it is available to them. For example, many months must pass before the public, or the general body of the medical profession for that matter, can possibly learn the views of the Director-General of Public Health of New South Wales on the value of the spectacular cordon of police officers that has been maintained at great public expense on the border between Victoria and New South Wales to prevent the passage of poliomyelitis contacts from the former to the latter State. We hope that in subsequent reports the Director-General will discuss

matters of this kind. The present report, however, contains much that is worthy of close attention.

Diphtheria was unusually prevalent in New South Wales during 1936. Of the 7,064 cases notified, 5,000 occurred between January and June, and were almost equally distributed between the metropolitan area and country districts. The incidence was much lighter among children under five years of age, but the death rate among them was considerably heavier. Of the 7,064 children, 29.12% were under five years of age and 70.88% were five years of age or over; 220 deaths occurred, 60.45% among children under five years of age, and 39.55% among children aged five years or over. The department undertook an active campaign in directing attention to the advantages and safety of immunization against diphtheria, the cooperation of 311 municipal and shire local authorities being sought. Departmental medical officers addressed meetings arranged by the councils and all anatoxin used was paid for by the department. The objective of the department was to secure the immunization of 100,000 children between June 1, 1936, and June 30, 1937. At the end of 1936, 43,300 children had been immunized; of this number, 12,000 were treated privately by their family doctors. On the figures it looks as if the department will probably have attained its objective; and we have no doubt that once the public has been taught to look upon immunization as desirable and not dangerous the department will consolidate its gains by trying to make further advances.

In the section dealing with tuberculosis it is stated that inquiries were made into the after-histories of 686 patients admitted in 1931 to sanatoria in New South Wales. Of these, 50.7% had died. This appears to be a large number, but when the tables setting out the details of the cases are studied the number will not be regarded as unduly high. The recommendations of the Director of the Tuberculosis Division need emphasis and appear quite reasonable. In the first place, he points out that the presence in sanatoria of "male incorrigibles" is a great handicap to the smooth working of the institutions. These patients are unwilling to observe the necessary routine of a sanatorium,

and come and go at intervals; naturally they upset the younger patients. The provision of some twenty or thirty beds in a dormitory attached to some more suitable institution is described as urgently required. In the second place, at least four additional antituberculosis dispensaries are needed in the metropolitan area, with a corresponding increase in the visiting staff of the division. Thirdly, additional accommodation for both nurses and patients is required at the Randwick Auxiliary Hospital, and the services of a visiting pathologist are also needed at this institution. Fourthly, the Director of the Tuberculosis Division thinks—and we are in entire agreement with him—that special facilities are urgently required, preferably in connexion with a metropolitan hospital, for surgical and other special treatment of patients with tuberculosis. The final recommendation is that a resident pathologist should be appointed to Waterfall Sanatorium.

In the section of the report dealing with venereal diseases some interesting information is found. Prophylaxis was used during the year by 999 persons. Of these, only 200 had associated with a prostitute prior to seeking protection—the prostitute is not the chief source of infection in Sydney; the amateur presents the greater problem. In directing the attention of readers to this problem, we would refer them to the excellent address by Dr. H. S. McLelland, published in a recent issue, in which he described man as a defaulter; and we would conclude with the following quotation from the report of the Director of the Division of Venereal Diseases:

Promiscuous sexual intercourse between men and women in similar spheres of life or meeting under similar social conditions appears to have increased with the improvement in contraceptive methods, and the services of the prostitute are not necessary.

Alcohol is a too common factor in the relaxation of morals, and its presence at dances in uncontrolled amounts is frequently disastrous. I have seen many young women, and some older ones, who have blamed a convivial night at a dance for their infection. The amateur appears to be as easy of approach under such circumstances as the prostitute, but not so careful. A girl who is usually discreet in her actions may, under the combined stimulus of alcohol and a dance, give her body intimately to a complete stranger whose company in less exciting moments would

be repugnant to her. At present youth sees no stable future, and a number are attempting to crowd the sensations of an adventurous lifetime into a few years of shabby, sordid, passionate living. Many will pass into a resentful middle age, burnt out and useless.

Current Comment.

THE TREATMENT OF GASTRO-INTESTINAL HÆMORRHAGE.

IT has recently been clearly demonstrated that the diet commonly prescribed for patients suffering from peptic ulcer so completely eliminates vitamin C that healing of the ulcer is thereby retarded and hæmorrhage promoted. Accordingly, it has been strongly advocated that liberal quantities of orange juice be given to supply the deficient vitamin. G. Bourne, of the department of medicine in the University of Sydney, has made a material contribution to the recent investigations concerning this matter. It has long been recognized that the methods of treatment of duodenal and gastric ulceration are not satisfactory. It would appear that the customary methods of dietetic management are erroneous in principle and in detail.

H. A. Cave has dealt exhaustively with the subject of gastro-intestinal haemorrhage.¹ He states that there is no absolute uniformity of method in the treatment of gastro-intestinal haemorrhage, whether it be hæmatemesis or melaena. He points out that when an ulcer manifests oozing or slight bleeding only, the problem is not momentous, and that the patients affected often recover even when there is no medical supervision. When, however, hæmorrhage is severe or repeated, a major catastrophe may be impending. The generally accepted regimen for a bleeding ulcer is absolute rest in bed with sufficient morphine and atropine to keep the patient quiet and to relax any existing muscular spasm. Some authorities forbid the patient to take any food by mouth for two or three days. Others permit only small, scanty feedings of such soft, bland and unirritating foods as custard, milk, cream and cream of wheat. After this period of complete or partial starvation, the diet is very slowly and carefully augmented in quantity and variety over a period of several weeks. During this time, as Cave insistently points out, the patient continues to be exhausted from his gross loss of blood, and is maintained in this state of weakness by a medical regimen of starvation type. The avowed object of the starvation is to abolish all peristaltic waves in the patient's stomach. But is any such assumption warranted on physiological grounds? Cave does not think so. The mere presence of blood, which is a protein substance, in the stomach will be a stimulus for peristaltic movement and digestion. Again, Cave

¹ *The Canadian Medical Association Journal*, February, 1933.

pertinently asks why, if alkalis avail to neutralize the acidity of the stomach contents of a patient suffering from an ordinary peptic ulcer, should they be withheld from him merely because the ulcer is bleeding.

In 1933 E. Meulengracht, of Copenhagen, reported the results of his treatment of haematemesis and melæna by administration of a varied and abundant diet to the patient from the first day of the haemorrhage. Cave observes that the reason which prompted Meulengracht to adopt this method of treatment was that patients exhausted by haemorrhage frequently died in spite of the starvation treatment and of the scrupulous dieting which followed it. A significant observation was that in the case of patients afflicted with protracted bleeding the haemorrhage ceased after food had been given. It was also noted that ambulatory patients recovered from severe melæna without any special change in their diet. In 1935 Meulengracht published the results of a series of 286 cases of gross haematemesis and melæna, in which the patients were treated "with food". Of these patients, 251 were deemed to be suffering from gastro-duodenal ulcers, and of this number only three died. Of the deaths, one was due to perforation with general peritonitis, and one to profuse bleeding seventeen days after treatment had commenced. The third patient died before "treatment with food" had been instituted. This series was compared with a similar series of 289 cases in another Copenhagen hospital. Twenty-two patients died, the mortality rate being, therefore, nearly 8%. Meulengracht stated that the radical alteration of the mortality rate following "treatment by food" was due to something more than the effect on the haemorrhage itself. According to Cave, patients suffering from the complication of haematemesis or melæna do not as a rule die before the eighth day after the onset of haemorrhage. He considers that death is not directly attributable to loss of blood, but to general exhaustion, often associated with complications. The exhaustion is primarily the result of the patient's anaemic state, which is accentuated by the extreme insufficiency of the food and drink administered. When "treatment with food" is adopted the patient receives nourishment which he urgently requires.

The treatment recommended is the administration of a full purée diet and the exhibition of sodium bicarbonate and magnesium carbonate with hyoscyamus and ferrous lactate. The purée diet includes tea, white bread, butter, oatmeal, milk, cocoa, sliced meats, and cheese, all suitably apportioned. The dinner consists of a variety of dishes, among which are appetizing meat balls, broiled chops, omelets, fish balls, vegetables, mashed potatoes, soups, cream of vegetables, stewed apricots, apple sauce, gruel, and rice and tapioca puddings. Cave considers that blood transfusions are useful and may save life in severe cases. They may be given regularly every twenty-four hours in proportion to the severity of the patient's con-

dition and the frequency of the bleeding. They not only, as Cave indicates, replace blood lost by an exhausted patient, but they also supply the coagulating elements which have been depleted by the recurring haemorrhages. The author believes that surgical intervention should aim at finding and controlling the bleeding point. He considers further that any endeavour to correct the pathological process which was the cause of the original ulcer, should be deferred till a later time, after the patient has recovered from the haemorrhages. If patients have had frequent and severe losses of blood, surgeons are reluctant to interfere on account of the grave risk of an operation upon a patient who is already in *extremis*. The fact that the exact location of the bleeding point is unknown is a further deterrent. Nevertheless, Cave advises that the patient who has only an occasional haemorrhage should be told of the possibility and gravity of repeated haemorrhages. He should be urged to submit to an operation on the bleeding area in a quiet interval between gross bleedings. The difficulty, as pointed out above, is to decide the point of origin of the blood even when the haemorrhage is profuse. Not all vomited blood comes from vessels of the stomach or duodenum. Relatively unimportant causes, such as epistaxis, a bleeding tooth socket or lesions of the nasopharynx or larynx may explain the presence of blood in the stomach. Blood escaping from the lungs or trachea may be unconsciously swallowed and later vomited or voided *per rectum*. In the vast majority of cases, however, gross haemorrhage is the result of gastric or duodenal ulceration. The next most common cause is cirrhosis of the liver associated with splenic anaemia or Banti's disease.

THE TOXICITY OF CINCHOPHEN.

It is not clear why cinchophen should be toxic to some persons and not to others. Eugene S. Sugg records 32 cases, including six observed by himself, in which it seemed that toxic hepatitis was due to an induced sensitivity to the drug rather than a natural intolerance.¹ He points out that many people take cinchophen for long periods without any apparent ill effect; some, after taking it for a period of weeks or months, suddenly become unable to tolerate it; some apparently are unable to take it at any time. According to Hench, cinchophen is a constituent of over 500 compounds advertised in the United States of America as remedies for rheumatism; therefore patients have ample opportunity to become sensitized before the drug is actually prescribed for them. Sugg draws attention to possible difficulties in diagnosis, pointing out that fatal toxic cirrhosis may occur without jaundice.

It is known that cinchophen has to be prescribed with caution; but if Sugg's contention is correct no degree of caution will safeguard the patient from its possible toxicity.

¹ *The American Journal of the Medical Sciences*, April, 1938.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Use of Sucrose Preparatory to Surgical Treatment of Glaucoma.

E. D. DYAR AND W. B. MATTHEW (*Archives of Ophthalmology*, July, 1937) consider that the intravenous injection of sucrose is the best means of reducing intraocular tension before operation in glaucoma. They recommend, as a routine preliminary measure, the slow intravenous injection of a 25% solution of sucrose, during a period of from 45 to 60 minutes. They state that this usually results in a fall in intraocular tension to from 12 to 22 millimetres, and believe that diabetes is not a contraindication to this use of sucrose.

Prognosis of Retinal Glioma.

F. VON PAPOLCZY (*Klinische Monatsschrift für Augenheilkunde*, Volume XCIX, 1937, page 355) reviews the cases of retinal glioma that occurred in Budapest clinics during the fifteen years ended in 1935. Of the twenty-seven cases, five were classed as congenital; thirteen occurred during the first year, four during the second year, two during both the third and fourth years, and one during the fifth year of life. Twenty-four of the patients were followed for periods of two and a half to seventeen years. None of the seven patients who were operated on in the first stage had died. Two of the seven patients in the second stage had died, and all of the six patients operated on in the third stage. Of the eight patients who died from metastases, five died within one year of enucleation, two died within two years, and one within two and a half years of enucleation. The condition was bilateral in 18%; this finding agrees with those of Hirschberg and Wintersteiner. Four patients of the five with bilateral gliomata were followed and three were dead. In two of these cases the optic nerve of the first enucleated eye was infiltrated by tumour cells; in the other the first eye was enucleated in the second stage, but the second eye became affected after three years. The only child with bilateral glioma who lived had both eyes enucleated at an early stage. The exact relationship between the growths in the two eyes is not yet settled. The author found in his twenty-seven specimens that, unlike choroidal sarcoma, the early tumours had capillary walls which were normal. This is why metastases do not occur in the first stage. If any infiltration is found in the enucleated stump when it is examined microscopically, the fate of the patient is sealed. Early enucleation is essential with removal of as much of the nerve as possible. If

the glioma has broken through the sclera, exenteration of the orbit and radiation are indicated. The prospects of treatment with radium and with diathermy are discussed. The use of these methods is justified only when parents refuse an operation or when the second eye becomes affected. Good results can be expected only in the first stage, possibly in the second, if the radiation is properly applied.

Transscleral Extraction of Iron Splinters by Means of Diathermic Incision.

H. J. M. WEVE (*Archiv für Augenheilkunde*, November, 1937) describes a new method of localizing and removing intraocular fragments of iron. This method, in his opinion, is of particular value if the foreign body cannot be extracted by the anterior route or if, because of its shape or size, extraction by this route is undesirable. Diathermy prevents the development of a retinal detachment, a complication which commonly follows the use of other methods. After subconjunctival injection of "Novocain" and adrenaline the sclera is exposed. The position of the fragment is determined by indirect ophthalmoscopy and the sclera is marked for a retinal tear. Arruga's spoon and Amsler's marker are used. A small radial incision is made slowly with a diathermy knife. Vitreous loss and intraocular haemorrhage are thus prevented. The magnet is applied after the current has been turned on, and the fragment usually appears at once. Scleral sutures are rarely necessary. The author considers that this method is also of value when ophthalmoscopy is impossible, in which case the fragment is localized by the Sweet or Comberg method. Transillumination was used in four and X rays were used in two of the cases described. In four of these the vision after operation was $\frac{1}{2}$, in one it was $\frac{1}{2}$, and in another $\frac{1}{2}$.

Retinal Tumours in Tuberous Sclerosis.

H. C. HESSINGER AND B. E. CLARKE (*Archives of Ophthalmology*, July, 1937) report a case of tuberous sclerosis with retinal tumour. Tuberous sclerosis, first described by Bourneville, is a condition characterized by epilepsy, mental deficiency and *adenoma sebaceum*, and hyperplasia of the skin distributed in a butterfly fashion on the face. Tumours of mixed undifferentiated cells are found in the heart, spleen, kidney, the cortex of the brain and the eye. Van der Hoeve first described the occurrence in six patients with tuberous sclerosis, of flat tumours in the retina of each eye. Critchley and Earl found them in only one of their twenty-nine cases. These tumours form white or grey areas in the retina away from the disk. Some are larger nodular tumours, usually

situated at or near the disk. The case here reported was that of an Italian, aged twenty years, with epilepsy and the typical eruption on the face. The visual acuity of the right eye was such that he could distinguish fingers at a distance of 60 centimetres. The right disk was obscured by a white shiny mass with a nodular surface, which extended forward five diopters, overlying the vessel. The patient had many convulsions and eventually died. Autopsy revealed multiple tumours of the brain, heart and kidney. The tumour of the optic disk was made of cells which were probably descendants of the first *Anlage* of the retina. Ida Mann considered them to be glial, derived from the first stage (fourth to fifth week) of retinal differentiation.

Epinephrine in the Conjunctival Sac.

L. HUBERT (*Archives of Ophthalmology*, June, 1937) states that instillation of epinephrine into the conjunctival sac does not dilate the pupil when the sympathetic nervous system is rendered hyperirritable by exophthalmic goitre, by diabetes, or by certain other conditions. The post-ganglionic fibres which supply the dilator muscle of the pupil, after leaving the superior cervical ganglion, follow the course of the internal carotid artery. Some filaments traverse the anterior wall of the middle ear, some join the tympanic plexus, some cross the tympanic cavity. Most continue along the carotid plexus, pass through the Gasserian ganglion, accompany the first division of the fifth nerve and its nasociliary branch, join the long ciliary nerves and so reach the iris. If the dilator muscle and other smooth muscles of the eye are cut off from their nerve connexion with the superior cervical ganglion, the instillation of epinephrine into the conjunctival sac will not only dilate the pupil, but will cause elevation of the lid and slight protraction of the eyeball. Hence the effect of epinephrine is useful in diagnosis. A woman with a tumour high up at the right side of the neck presented Horner's syndrome. The right pupil was not dilated by cocaine, but it was dilated by epinephrine; this showed involvement of the superior cervical ganglion. Irritability of the dilator muscle has been found in association with aural disease. In chronic glaucoma epinephrine dilates the pupil. In unilateral glaucoma the unaffected pupil may dilate, indicating a preglaucomatous state.

Intracapsular Extraction of Cataract.

K. C. DUTT (*Archives of Ophthalmology*, December, 1937) claims that he makes use of the principle of Class II lever action in the extraction of the lens. The instruments used at the twelve o'clock position provide the fulcrum; and the instrument below,

the dislocator, represents the power; the weight is represented by the resistance of the suspensory ligament. After the corneal section the fulcrum is placed at the twelve o'clock position on the outer surface of the sclera and the lens in its capsule is dislocated by "fish-angling" jerks applied at the six o'clock position with the mango leaf dislocator from the outside of the sclera. The zonule is breached and the lower border of the lens is tilted forwards and turns on the upper fulcrum. The lens is followed up and extracted.

OTO-RHINO-LARYNGOLOGY.

Chronic Cicatricial Stenosis of the Larynx.

E. SCHMIEGLOW (*The Journal of Laryngology and Otology*, January, 1938), in the 1937 Semon Lecture, describes his method of treatment of chronic cicatricial stenosis of the larynx. He states that it is possible to operate on small children, but that it is better not to commence the treatment before the child is five years old, on account of the difficulties due to the small dimensions of the field of operation. Before the stenosis itself is attacked the tracheal cannula must be removed as far away from the larynx as possible by performance of an inferior tracheotomy. A week later the stenosis itself is exposed freely, by being split from the outside by means of a laryngo-tracheal fissure. The form, character and extension of the stenosis are carefully examined. If diaphragmatic strictures have to be dealt with, these are removed by means of scissors, knives and punch forceps, so that the lumen of the stenosed part of the larynx is made as nearly normal as possible. An india-rubber drain, about five centimetres long, is then introduced. It is best to use a drain which is slightly wider than the lumen, so that it presses against the walls of the larynx. The india-rubber tube is introduced between the lips of the external wound, which are kept apart by means of retractors, and the drain must be laid so that its ends extend beyond the narrowed part of the windpipe. The upper end of the drain lies in the larynx, but is not allowed to protrude into the pharynx; it must remain at the level of the upper aditus of the larynx. If it is placed too high, particles of food can get into the trachea and cause irritation, coughing and eventually infection of the air passages. Fixation of the drain is performed translaryngeally by means of a long, curved, slender perineal needle, which is passed from side to side through the soft parts of the neck, the thyroid cartilage and the drain, and then threaded with a thin silver wire, which is drawn back through the throat. When it is certain that the drain is inserted

in the correct way, it is necessary to control the position of its upper end, which can be done either by introduction of the exploring finger through the mouth or by means of indirect laryngoscopy, or, in children, by direct (suspension) laryngoscopy. The upper end of the drain must be above the vocal cords. Should it be found that the drain has been placed too high or too low, its position will have to be corrected and the translaryngeal fixation renewed. In children, the tracheal cannula must be left in position during the treatment. In adults, on the contrary, in whom often it is possible from the very beginning to introduce a drain as thick as a finger, in many cases the tracheal cannula may be removed directly after the drain has been fixed in its proper place, as the large lumen of the drain will permit of perfectly easy respiration through the mouth. The drain, having been allowed to remain in position for a sufficient time, which may be some weeks or some months, can, together with the wire, be removed from above through the mouth by a laryngeal forceps, introduced by direct or indirect laryngoscopy. In children this is done under general anaesthesia; in adults, under local anaesthesia of the pharynx. Even when a drain has been in position for three months, it has always been entirely free from incrustations. The drain can continue its work of dilatation during periods of several months without causing inconvenience to the patient. As to the external wound, it can either be closed with a few stitches or left to itself; it heals in the course of a few days.

Aural Vertigo.

A. J. WRIGHT (*The Journal of Laryngology and Otology*, February, 1938), in a clinical study of aural vertigo, states that as a result of a critical analysis of seventy-five cases he believes that the majority of cases of aural vertigo in which middle-ear suppuration is not present are due to a chronic labyrinthitis. He believes that the condition is not secondary to middle-ear disease, and deduces from his investigations that the labyrinthine disease is caused by the presence of a focus of infection, usually situated in the nose, throat or mouth. He suggests the name of "focal labyrinthitis" for this disease.

Bone Formation in the Scala Tympani in Otosclerosis.

F. R. NAGER AND J. S. FRASER (*The Journal of Laryngology and Otology*, March, 1938), in a paper dealing with their observations on bone formation in the *scala tympani* of patients with otosclerosis, state that it is generally believed that in otosclerosis the main changes concern the labyrinthine capsule, and that as a rule the inner ear shows only minor alterations. On histological examination of large numbers of otosclerotic petrous bones

there are, however, some rare cases which show more or less extensive bone formation in the *scala tympani*. Six petrous bones of otosclerotic patients, with more or less extensive bone formation in the *scala tympani*, are described. The otosclerotic process in all these observations was greatly extended and penetrated even into the newly-formed lamellar bone. The authors consider that this change in the *scala tympani* is a consequence of the irritation by the otosclerotic process of the labyrinthine wall, and state that it has not been found in any other bone disease.

The Vaccination of Students against Colds.

KARL MUSSER HOUSER (*Archives of Otolaryngology*, September, 1937) gives an analysis of results of vaccination of 108 students against colds. All were examined carefully before treatment and the condition of the nose, throat and sinuses was determined. If major anatomical nasal abnormalities were present, surgical operations were recommended instead of injections. Suppurative conditions of the sinuses were not included, as it was the intention of the author to use the vaccine for the purpose of prevention rather than of cure. Allergic students were tested and treated accordingly. A stock vaccine was used. An analysis of the statistics of the series indicates that prophylactic vaccination against colds is followed by lessened severity and duration of the disease. From six to ten small graduated doses of vaccine are more likely to produce results than are three large doses. Vaccination can and should be carried out without the production of constitutional symptoms. The author states that there is little evidence that colds are prevented by this type of therapy.

Spontaneous Perforation of the Chest Wall by an Aspirated Foreign Body.

ERNEST M. SEYDELL (*Archives of Otolaryngology*, August, 1937) reports eleven cases in which a foreign body was aspirated into the bronchus, passed through the lung and the pleural cavity and presented under the skin of the chest wall. In each instance the foreign body passed through the right bronchus and appeared between the ribs of the right wall of the chest. In all but one case the foreign body was extruded through the posterior wall of the chest. In ten cases the foreign body was a head of grass. In the eleventh case it was a twig from a juniper tree. All these foreign bodies, with the possible exception of the juniper sprig, are said to have the power of spontaneous propulsion. The shortest time that elapsed between the aspiration of the foreign body and its appearance under the skin of the chest wall was eight days, and the longest one year, the latter period being in the case of the twig from a juniper tree.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held on October 28, 1937, at the Adelaide Hospital. Dr. R. E. MAGAREY, the President, in the chair. The meeting took the form of a number of clinical demonstrations by members of the honorary staff.

Peroneal Muscular Atrophy.

DR. H. K. FRY showed a male patient, aged forty-nine years, who was a good runner as a boy, but was told by his schoolfellows that he had two left legs. During his later teens he found increasing difficulty in handling milk pails. Fourteen years before the meeting he had to give up delivering milk and eventually he could no longer milk his cows. For the past two years he had been unable to button his clothes. Typical wasting of the intrinsic muscles of the hands and feet and of the muscles of the lower half of the legs was present. He walked fairly well on a slightly wide base with a "spongy-rubber" tread. The tendon reflexes at the elbow and knee were active. No loss of sensation had occurred to cotton wool, to pin-prick, to heat and cold, to vibration, or on movement of the digits. No Rombergism was present. The patient had eight brothers and sisters; two brothers were similarly affected; one sister's feet were affected. The feet of a daughter of one brother were affected. The mother, aged eighty-nine years, was leading an active life, assisting in the dairy work; her feet were affected. The mother stated that her father's brother and her father's mother were severely affected. The patient at the time of the meeting was employed in herding cows.

Schilder's Disease.

Dr. Fry's next patient was a female, aged twenty years, who was admitted to the Adelaide Hospital from Hahndorf on January 20, 1937. This girl experienced some difficulty in walking owing to a weakness of her feet in October, 1936. A week later she noticed that her sight was failing. She began about Christmas time to have bouts of headaches referred to the sides of the head and behind the eyes, and her memory became poor. She did not go to bed before her admission to hospital, but sat about. On admission she was very dull mentally and unable to supply a personal history of her illness. The histories given by her mother and by a friend were somewhat contradictory. The sight of her right eye had failed as a baby, but since that time she had had no illnesses until the present one. She had been mentally bright and especially proficient in playing the piano. Her symptoms appeared three or four weeks after her first "permanent wave". About a week before her admission to hospital she complained of a pain down the left leg and of trembling of the left leg.

When first seen after her admission she was semicomatose and incontinent of urine. Some ptosis, divergent strabismus and wildly oscillating movements of the eyes in both horizontal and vertical directions, most pronounced when the patient looked to the left, were present. The left pupil reacted to light and the right pupil was inactive to light but reacted consensually. No movements of accommodation were made. Voluntary movement of the eyes upward and downward was not obtained. The head tilted to the left. The left side of the face appeared atonic, and the muscles of the left side of the face were slightly paretic. The tongue and palate were in the middle line. The palatal reflex was present. Dr. Tostevin reported that extensive choroiditis was present in the right eye, and that the left disk was atrophic. He found nothing in the fundus to account for the patient's statement that she was unable to see anything with the left eye. The left arm fell in hyperpronation, the left wrist was atonic. The tendon reflexes of the arms were exaggerated, the left more than the right. Dysdiadochokinesis of the left arm with ataxia was present. The reflex of the left hand was tonic. Hyper-tonus of the recti abdominis muscle was noticed, the

abdominal reflexes were present, less active on the left side than on the right. The tonus was normal and equal in the legs; the knee jerks were exaggerated, the right more than the left. The ankle jerks were exaggerated, clonus being more sustained in the left. The plantar reflexes were indefinite. A diminished response to pin-prick and cold was elicited in the left arm; otherwise results of tests of sensation were indefinite. The movements of the left leg were ataxic.

On January 26, 1937, lumbar puncture was performed, and fluid was withdrawn under a pressure of 45 millimetres of water. The response to the Queckenstedt test was positive. The cerebro-spinal fluid was clear and colourless, and contained less than one lymphocyte per cubic millimetre. It contained an excess of globulin, and the protein content was 140 milligrammes per 100 cubic centimetres. Both blood and cerebro-spinal fluid failed to react to the Wassermann test.

DR. J. S. VERCO reported on an X ray photograph of the head:

The sella turcica is large and the anterior clinoid processes small. This may be due to pressure or may be developmental. No other bony abnormality detected.

On February 8, 1937, pronounced tonic extension of the left leg was noticed. The patient rubbed her nose frequently. On February 9, 1937, lumbar puncture was again performed, and the fluid was found to be under a pressure of 200 millimetres. The protein content was 80 milligrammes per 100 cubic centimetres. The Lange gold curve was "0012221000". On February 11, 1937, movements of the left hand were fumbling and ill-directed. Scissors were recognized by touch and held correctly in the right hand, but not in the left. Piano-playing movements were well executed by both hands. The patient touched the left or right eye correctly with either hand. She had vomited on several occasions. On February 15, 1937, the ptosis was more marked. Short upward movements of the eyes were made but not sustained. The eyes rolled up when the lids shut. A match box was placed in the patient's hand, but she gave no response when told to open it. On March 1, 1937, a flexor tonus was present in the right arm, and an extensor tonus in the left arm. The wrists were atonic, the neck was not rigid. On March 8, 1937, the patient gave no response to questions. She was restless, rolling her head from side to side; the right arm and leg moved constantly in alternate flexion and extension. The left arm and leg were immobile. The left elbow was flexed, the left wrist and fingers were extended. The patient was completely incontinent.

On March 9, 1937, lumbar puncture was again performed, and the cerebro-spinal fluid was under a pressure of 225 millimetres of water. The fluid was faintly opalescent and contained less than one lymphocyte per cubic centimetre, and an excess of globulin. The protein content was 65 milligrammes per 100 cubic centimetres. The fluid was not suitable for a colloidal gold test. The opalescence disappeared on the addition of a little dilute hydrochloric acid and was not bacterial.

On March 19, 1937, the patient still gave no response to questions and moaned continually. On March 23, 1937, the patient answered questions, and was not so restless. On April 1, 1937, she was much better, and could distinguish fingers. Strong hypertonus of left arm in flexion and of left leg in extension was observed.

From this time the patient made a slow general progress towards recovery.

On July 1, 1937, DR. SCHNEIDER reported:

The right eye presents old disseminated retinochoroiditis, which in its active state gave rise to much exudate and hemorrhage. The exudate and hemorrhage have organized and obscure large patches of the fundus, including the disk. The disk is waxy grey and the nerve atrophied. The left eye presents primary optic atrophy. It is impossible to obtain the fields of this patient.

On September 8, 1937, lumbar puncture revealed cerebro-spinal fluid under a pressure of 130 millimetres of water,

containing a slight excess of globulin, and 60 milligrammes of protein per 100 cubic centimetres. The fluid contained two lymphocytes per cubic millimetre and two erythrocytes per cubic millimetre. No precipitation of colloidal gold was obtained. Dr. Nott reported on the same date that he could not detect radiographically any alteration in the stereoscopic films of the skull. On October 20, 1937, the patient menstruated for the first time since her admission to hospital. At the time of the meeting she was barely able to sit up in bed. A slight horizontal nystagmus was still present when she looked to the left. She could distinguish and count matches. The visual fields were full to confrontation tests. The left arm was still slightly hypertonic in flexion, and slightly ataxic. The left leg was strongly hypertonic in extension. The plantar reflexes were still vague. In the left leg sensation appeared to be slightly diminished to cotton wool, pin-prick, temperature and vibration, but otherwise it was normal. The hearing was normal. The patient was incontinent of urine and faeces at times.

Fracture of the Radius.

Dr. E. F. WEST showed a patient, aged seventeen years, who five years previously had fallen and fractured the upper third of the right radius. At that time there appeared to be no dislocation at the radio-humeral joint. At the time of the meeting, however, clinical signs were present of a forward and outward dislocation of the head of the radius. X ray examination revealed subluxation of the radial head with outgrowths of bone. Function was good, but the limb ached after strenuous use. Some grating was present in the joint. Dr. West said that no treatment was being advised at the time, but that later he would consider excision of the radial head if it gave further trouble.

Periosteal Sarcoma.

Dr. West's second patient was a child, aged nine years, who fourteen days previously fell and struck the left thigh in the adductor region of the upper third with a pointed stick. The skin was not damaged, but a lump arose. No lump had been noticed there previously. On examination a tumour the size of a fetal head was found in the adductor region of the upper third of the left thigh. With the child under ether anaesthesia the tumour was dissected out. It had to be dissected off the periosteum of the upper third of the femur, and extended up as high as the obturator extensor muscle. Macroscopically, a section of the tumour resembled a uterine fibroid growth; it was firm. Microscopic examination of a section revealed that the growth was a sarcoma arising from the periosteum, of extrperiosteal type. It contained some, but not much, fibrous tissue. The cells were irregular in shape, showing frequent mitoses. It was evidently a very malignant type of sarcoma. X ray examination of the femur revealed no abnormality. X ray examination of the chest two days before the meeting revealed metastatic deposits in the right side of the chest. The child was having deep X ray therapy to the leg and chest.

Perthes's Disease.

Dr. West's third patient was a child, aged four years, who was admitted to hospital with a history of a limp of three months' duration, and of pain in the right leg. The child walked with the right leg in the position of abduction at the hip joint. On examination the child was seen to be undersized. Limitation of abduction and of internal rotation were found in the right hip joint. No response was elicited to the Mantoux test.

Radiological examination revealed slight flattening of the right femoral head, which was a little denser than the left. The interarticular space appeared slightly wider on the right side. Dr. West remarked that it was very rare for Perthes's disease to cause symptoms giving such early radiological findings.

NOMINATIONS AND ELECTIONS.

THE undermentioned has applied for election as a member of the Western Australian Branch of the British Medical Association:

Green, Ernest Joseph, M.B., B.S., 1933 (Univ. Melbourne), Pearce Aerodrome, Bullsbrook.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Barron, Andrew Moncrieff, M.B., B.S., 1938 (Univ. Sydney), Sydney Hospital, Sydney.

Cooley, Beryl Glover, M.B., B.S., 1936 (Univ. Sydney), 466, New South Head Road, Double Bay.

Ellis, Frank Fairfax, M.B., 1927 (Univ. Sydney), c/o Dr. C. R. Blomfield, Main Street, Cessnock.

Lawrie, Charles Malcolm, M.B., B.S., 1927 (Univ. Sydney), Prospero Street, Murwillumbah.

The undermentioned has been elected a member of the South Australian Branch of the British Medical Association:

Pellew, Leonard James Ternouth, M.B., B.S., 1932 (Univ. Adelaide), F.R.C.S. (England), 1936, Hutt Street, Adelaide.

Medical Societies.

THE MELBOURNE PÄEDIATRIC SOCIETY.

A MEETING of the Melbourne Pädiatric Society was held at the Children's Hospital, Carlton, on March 9, 1938, Dr. ROBERT SOUTHBY, the President, in the chair. The meeting took the form of a number of clinical demonstrations by members of the society.

Anuria Complicating Appendicectomy.

Dr. J. G. WHITAKER and Dr. S. WILLIAMS showed a girl, aged twelve years, who had recovered from suppression of urine after appendicectomy. Dr. Whitaker said that he had operated upon the girl in December, 1937, for acute appendicitis. He had provided for drainage of the abdomen, and everything seemed to be quite satisfactory for over a week. On the ninth day the girl's condition had deteriorated rapidly because of generalized pain and severe vomiting. On the following day she was drowsy to the point of being difficult to rouse. As she had not passed urine during the attack, he had catheterized her bladder and had obtained merely 30 cubic centimetres (one ounce) of urine, which was obviously blood-stained; and during the following thirty-six hours no more urine was obtained. There had not been any preceding evidence of affection of the kidneys or urinary tracts. Dr. Whitaker stated positively that the complication was not caused by the passage of the catheter. The condition was present before the instrumentation. The characteristic symptomatology consisted of generalized pain in the back amounting to attacks of colic, drowsiness and black vomit, with general oedema and suppression of urine. Realizing the gravity of the complication and the necessity for diuresis, he had consulted Dr. Stanley Williams. During the suppression period the blood urea content was found to have risen to 130 milligrammes per 100 cubic centimetres. Dr. Whitaker regarded the complication as unusual after an abdominal operation on a child, and thought that its occurrence and the successful method of treatment which had been adopted, would be of great interest to the members of the society. The urine had become quite

normal, and, as they could see for themselves, the patient when presented appeared to be a very healthy little girl. Dr. Williams confirmed what Dr. Whitaker had said about the gravity of the child's condition, and added that on the day when he had first seen her some oedema was observable about the face and legs. On the following day the oedema had increased in those locations and had extended to the thorax and trunk. Dr. Williams also referred to the restlessness and excitability shown when the child was roused from lethargy. He said that he had realized that the vomiting would make oral therapy difficult, and that the situation demanded the application of a therapy that was likely to be rapidly effective. Urine had to be passed without delay or the patient would not survive. He had begun the intravenous injection of fluid by the administration of a solution consisting of 2·5% of glucose in isotonic saline solution, and ran in 280 cubic centimetres (ten ounces) in two hours, using the drip method described by Marriott and Ian J. Wood. The vomiting had continued, the oedema of the skin had increased slightly, and the anuria was not overcome. In the meantime an isotonic solution of sodium sulphate had been prepared in the laboratory at Bethesda Hospital. The isotonic solution of sodium sulphate was allowed to run into the veins by the drip method, rather more slowly than was customary in the treatment of dehydrated children. In six hours 568 cubic centimetres (twenty ounces) had been infused, and although the child's condition was not improved and the skin oedema was still increasing, there was no evidence of oedema of the lungs or of cardiac embarrassment. An additional 170 cubic centimetres (six ounces) of the solution were infused during the following six and a half hours, and after suppression of urine for thirty hours the child passed 60 cubic centimetres (two ounces) of urine, ten hours after the commencement of the intravenous infusion of isotonic sodium sulphate solution. Five hours later a little over 60 cubic centimetres (two ounces) and during that day 250 cubic centimetres (ten ounces) of urine were voided, a little at a time. There was a corresponding improvement in the general condition of the patient. Once micturition was established, the improvement continued. In twenty-four hours 2·8 litres (100 ounces) of urine were voided, the oedema disappeared and the child recovered rapidly. The child had not been deprived of fluids taken by mouth. Two hundred and eighty cubic centimetres (ten ounces) were given orally during the suppression, and over 1·4 litres (fifty ounces) in twenty-four hours from the time when voiding of urine had commenced. The only auxiliary treatment used was the application to the loins of a warm poultice of "Plastine".

Dr. Williams considered that it was difficult to offer an explanation for the occurrence of acute suppression of urine on this occasion, but suggested tentatively that it might have been due to a toxic action on the kidneys associated with peritonitis. He commented that he had used the isotonic sodium sulphate solution because he had been impressed with the soundness of the physiological basis advanced by I. L. Dick in *The Edinburgh Medical Journal, Medical Society Transactions*, Volume XLI, 1934. Dick had pointed out that sodium sulphate was a better diuretic than sodium chloride, as it had no threshold level in the blood. Further, it was not stored in the tissues and remained in the circulation to stimulate diuresis. Finally, the sodium sulphate was not absorbed by the tubules of the kidney after passing through Bowman's capsule. The solution was prepared by dissolving 42·85 grammes of sodium sulphate in one litre of sterile water. In conclusion, Dr. Williams said that administration of the solution appeared to have been of value to the patient under consideration; but it had to be remembered that a favourable result might have been obtained without intravenous therapy or by the intravenous use of some other solution, such as hypertonic saline solution, which had been recommended by some writers. The happy outcome of the situation under discussion might, however, encourage others faced with that serious problem to use the sodium sulphate solution.

Dr. H. B. GRAHAM congratulated Dr. Whitaker and Dr. Williams on the efficient management of a difficult

problem. He considered it improbable that the child's kidneys were perfectly normal, and mentioned the possibility of the presence of congenital polycystic disease, which frequently was a silent condition for a variable length of time. It could even be detected accidentally at an advanced age in a routine investigation of other members of a family known to contain a member with the polycystic condition.

Dr. P. JONES said that he remembered an adult who had had anuria following appendicitis. The patient had been sent to the Royal Melbourne Hospital with the provisional diagnosis of spontaneous rupture of the bladder. The patient had not passed urine, and there were signs of free fluid in the abdomen. The patient had died soon after admission to hospital, and at the autopsy was found to have had gangrenous appendicitis and peritonitis.

Dr. C. H. OSBORN said that in 1936 a colleague had discussed with him the circumstances of a case of post-operative anuria in which similar intravenous therapy had been tried, but without success. Dr. Osborn had also noticed an article in *The Practitioner* on the work of Dick. The writer had used the sodium sulphate solution, and it had been successful.

Dr. R. SOUTHBY said that he was the practitioner who had sent to hospital the patient referred to by Dr. Jones. The man was a confirmed alcoholic, who, after being comatose from an alcoholic bout, had had an attack of intense abdominal pain associated with inability to pass urine. Dr. Southby had obtained only half an ounce of blood-stained urine by catheter, and had made the provisional diagnosis of ruptured bladder. The patient had had anuria apparently coincidentally with appendicitis. Dr. Southby recalled that he had considered seriously in that case the possibility of obstruction of the bowel. Uremia could closely resemble obstruction.

Congenital Cyst of the Lung.

Dr. H. L. STOKES showed a girl, aged nine years, suffering from congenital pulmonary cystic disease. In November, 1937, the patient had come under his care at the Children's Hospital because of cough and of failure to thrive, extending over a period of about three months. There was not any history of antecedent serious illness, and the child was not producing any appreciable amount of sputum. The little girl had a twin sister, and both children were found to be underweight and resembled each other closely in physical appearance. Each took a keen interest in participation in the usual games at school.

On examination of the child evidence suggestive of right-sided pneumothorax was obtained, but on radiographic investigation the presence was established of two large air-containing cysts filling the lower two-thirds of the right side of the chest. No fluid level was demarcated, nor was any evidence adduced indicative of infection of either of the cysts, and the upper third of the right lung was of normal appearance. It was definitely shown that the mediastinum was displaced, showing that the air in the cysts was under positive pressure. On a later occasion lipoiodol was inserted into the bronchial system, but none of it entered the cysts. In the film the appearances suggested that the lower right bronchus terminated blindly in the upper cyst wall. The faint possibility that the condition might have been an extensive right-sided diaphragmatic hernia was excluded by means of a barium meal investigation. No reaction was obtained to the Casoni intradermal hydatid test on two occasions.

Dr. Stokes discussed the management of the patient, stating that he proposed to watch the child carefully; and if at any time evidence was found of increasing right-sided intrathoracic pressure, he would consider the advisability of surgical intervention. He had the feeling that before very long lobectomy would have to be undertaken. He had avoided any possibility of infecting the cysts by refraining from inserting a needle.

In conclusion, Dr. Stokes gave a brief survey of the literature dealing with similar conditions, and said that it was his intention to publish the full account of the patient's case after further observation.

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Dr. J. O'SULLIVAN said that the radiography in the case was of interest to him. It was probable that the two cysts present communicated with each other. He had on other occasions seen small cystic degeneration of the lung, in which multiple small cyst outlines could be identified. He recalled the films of a girl, aged seventeen years, who had complained of ineffectual cough for ten years, and was referred because of the possibility of the presence of empyema; in those films the small cysts were differentiated and provided an interesting contrast with Dr. Stokes's case. Dr. O'Sullivan observed that as the cysts were air-containing, they must communicate with the bronchi in inspiration, and it was likely that the communication was valvular. He remembered another example of cystic disease which had involved both lungs. The treatment in these cases provided an interesting commentary.

Over-Corrected Talipes Equino-Varus.

Dr. W. FORSTER showed a boy, aged six years, suffering from over-corrected *talipes equino-varus*. Originally the child had had a small, short foot with poorly developed heel and fairly marked *equino-varus*. He had attended Dr. Forster's clinic for two years, and Dr. M. Kent Hughes had assisted Dr. Forster at weekly corrections of the deformity in the initial period. The boy had reappeared recently with a fractured arm, and Dr. Forster had discovered that the original foot condition had been very much over-corrected. The boy had definite valgus deformity and flat foot. Radiographically there was nothing wrong with the bones.

Dr. W. KENT HUGHES said that the after-result was what he would expect to find after dislocation of the foot with Thomas's wrench. Too much force had been used on the anterior part of the foot and not enough on the neck of the talus, which was still as much deformed as it had been in the beginning. He expressed the opinion that Dr. Forster should overcome the valgus deformity, which otherwise would get worse, and later he might have to deal with the talus. The important thing in *talipes equino-varus* was the dislocation of the neck of the talus.

Dr. J. B. COLQUHOUN said that the boy's foot illustrated a point that had long been exercising the minds of those called upon to overcome the deformity. W. J. Little had suffered from *talipes* himself, and his foot had been subjected to tenotomy of the *tendo Achillis*. Towards the end of his life Dr. Little said that the *tendo Achillis* should never be lengthened in *talipes* till every other means of correcting it had been exhausted. His reason for this attitude was that after tenotomy the valgus or planus deformity was likely to replace the original one. Dr. Colquhoun said that he had seen similar after-results when the Thomas wrench had been used so forcibly that the *tendo Achillis* had been torn off the *os calcis*. Comparatively recently he had found a gap of almost 5-0 centimetres (two inches) in the *tendo Achillis* of an elderly medical man who had ruptured the tendon some sixteen years earlier. The ruptured tendon had not been sutured, and the disability closely resembled that of Dr. Forster's patient. He advised Dr. Forster not to cut the boy's *tendo Achillis*. The foot would be ugly, but ultimately stabilization of the foot by one of the recognized methods would have to be undertaken before a good working result was obtained.

Dr. W. KENT HUGHES at that stage dissented strongly from the idea put forward by Dr. Colquhoun that the *tendo Achillis* should not be cut in *equino-varus*.

Dr. Forster, in reply, stated that Thomas's wrench had not been used and that the boy had not had an anaesthetic at any time. The manipulations had not been so severe that anaesthesia was needed. He could not see any abnormality about the neck of the talus and could not agree that it was always to blame. The child could stand upon the toes of one foot at a time so that there could not be any gross weakening of the *tendo Achillis*. He could not see how to foretell that the result obtained in that case was likely to occur in another. The correction of *equino-varus* had to be completed, and if over-correction was not made at the time in many instances the position of *equino-varus* recurred.

Pathological Exhibits.

Dr. REGINALD WEBSTER showed lantern slides prepared from pathological specimens, the originals of which were also on view.

Poliomyelitis.

Dr. Webster exhibited photomicrographs prepared from microscopic sections which had established the diagnosis in a very anomalous case of poliomyelitis. The infant was one of a family of four, all of whom became ill in succession and presented similar clinical features, the chief of which were abdominal pain, nausea and some vomiting. The baby was the last to become ill.

Dr. Webster had been in communication by telephone with the medical attendant of the family, who had said that although he had the possibility of poliomyelitis constantly in mind, he could obtain no clinical evidence to warrant such diagnosis. None of the other three children of the family had exhibited any paralysis, but he nevertheless examined the child for the "spine sign" and other clinical guides to the diagnosis of poliomyelitis. Thirty-six hours after the onset of the child's illness he was brought to the Children's Hospital, where he died in the out-patient department before arrangements could be completed for his admission. From the manner of the child's death, the resident medical officer, Dr. T. W. Vorrath, gained an impression of bulbar paralysis, upon which he obtained the consent of the parents of an autopsy.

Dr. Webster showed three photomicrographs in which the perivascular cell collarettes and the focal and diffuse inflammatory reaction of poliomyelitis were severely demonstrated. The microscopic section from which he had taken the photographs was prepared from the medulla.

Bacillus Tuberculosis: Human and Bovine.

Dr. Webster also showed cultures of *Bacillus tuberculosis*, in which the cultural differences between the human and bovine types were sharply defined. He contrasted the profuse, verrucose, pigmented growth of the human tubercle bacillus (eugonic) with the relatively scanty, flat, non-pigmented character (dysgonic) of the bovine bacillus in cultures of the same age. The culture medium, that of Petagnani, was very similar in composition to the perhaps better known Löwenstein's medium, and it was giving very satisfactory results.

Dr. Webster said that since he last worked on the subject of the differentiation of human and bovine strains in tuberculosis in childhood, notable advances had been made in the technique of cultivation of the tubercle bacillus. To such advances Corper had contributed largely, and that worker declared that cultural methods for the detection of the tubercle bacillus were equal in sensitivity with that of guinea-pig inoculation.

He could speak from only a short experience of the improved cultural methods, but the indications were that the claim advanced by Corper would be justified. At the time of the meeting he had four strains of *Bacillus tuberculosis* recovered from urine, and two grown from specimens of cerebro-spinal fluid, all raised without benefit of guinea-pigs. It was perhaps not generally appreciated that in any given specimen of tuberculosis material the bacilli must be present in numbers of 100,000 per cubic centimetre before they could be found in smears by the Ziehl-Neelsen method. By much patient research based on quantitative plantings, Corper had estimated that tubercle bacilli were viable in artificial culture and could thus be detected when present in numbers of 10 to 100 per cubic centimetre.

Sensitive methods of culture had been applied with notable findings to the detection of tubercle bacilli in specimens of sputum, in which repeated microscopic examinations had given no results. The tissue substrate micro-culture of Corper was very valuable in that particular, and a positive report could frequently be issued in fourteen days from the receipt of the specimen.

Dr. Webster said that C. A. Green, in *The British Medical Journal* for January 15, 1938, had reported the results obtained in the bacteriological department of the University of Edinburgh in the examination of 2,796 routine specimens of sputum. In that large series, cultivation, mainly on the

Löwenstein-Jensen medium, yielded an increase of 32·4% of positive findings over the direct film method. Recent literature contained many observations of a similar nature, notable among which were those of Shrewsbury and Barson, reported in *The British Medical Journal*, Volume I, 1937, at page 1154.

Dr. Webster intimated that he had entered upon a further investigation of the relative incidence of human and bovine tuberculous infection in the human subject. The work was under the auspices of the National Health and Medical Research Council, and he asked any present who might be associated with other hospitals to assist him in obtaining material. He could deal with much more than the Children's Hospital could provide.

He was not interested in sputum for purposes of differential study, but was very anxious to investigate as many specimens as possible representing non-respiratory tuberculosis. He had given some discussion of the question of sputum examinations merely to draw attention to the value of cultivation in suspicious cases, in which no results were obtained by the usual film examination.

The Royal Australasian College of Physicians.

EXAMINATION FOR ADMISSION TO MEMBERSHIP.

We have been asked to publish the following announcement concerning the examination for membership of the Royal Australasian College of Physicians.

The examination for membership of the Royal Australasian College of Physicians consists of the following: (i) a paper on the principles and practice of medicine, including pathology, therapeutics and the history of medicine; (ii) an oral examination, which may include the clinical examination of patients, together with the identification of naked-eye and microscopic specimens.

Both men and women are eligible for membership. Candidates must be graduates in medicine of at least three years' standing and must have obtained registration as medical practitioners in the Commonwealth or the Dominion of New Zealand or in some other country approved by the council. Doctors of Medicine of universities approved by the council of the college and Members of the Royal Colleges of Physicians of London, Edinburgh and Ireland, will be exempted from the written portion of the examination. For a period of five years from the date of inauguration of the college, that is, until April 1, 1943, any candidate who has been a legally qualified medical practitioner for not less than fifteen years, and who has proved himself (or herself) to possess exceptional medical ability, may, at the discretion of a board of censors, be exempted from the written portion of the examination. Candidates who wish to avail themselves of this exemption must state their desire to do so in making application for permission to present themselves for examination.

Every candidate for membership is required to apply in writing on the prescribed form to the censor-in-chief of the college for permission to present himself for examination. Applications must be lodged with the honorary secretary of the college, Dr. A. S. Walker, not less than one calendar month before the date of commencement of the examination. Candidates who are approved at the examination by the board of censors are required to apply to the council of the college for election as members.

The dues for membership of the college are thirty guineas. Ten guineas must be lodged with the application for permission to enter for the examination; this sum will not be refunded to candidates who are unsuccessful in the examination. Successful candidates may pay the balance of the total dues, that is, twenty guineas, either in a lump sum or, with the council's approval, in five annual instalments of four guineas.

The dates on which it is proposed to hold the first examination for membership in Australia are as follows:

Written examination: Melbourne, August 18, 1938;
Sydney, August 13, 1938.

Oral examination: Melbourne, August 26 and 27, 1938;
Sydney, September 9 and 10, 1938.

If sufficient candidates present themselves, the written portion of the examination may be held in other centres; but it will be necessary on this occasion for all candidates to attend the oral examination in either Sydney or Melbourne.

Applications for permission to enter for the examination must be lodged with the honorary secretary of the college, Dr. A. S. Walker, 185, Macquarie Street, Sydney, not later than July 13, 1938.

Prospective candidates in Australia may obtain entry forms and further particulars about the examination from the following:

New South Wales: The honorary secretary, Dr. A. S. Walker, 185, Macquarie Street, Sydney.

Victoria: The censor-in-chief, Dr. S. O. Cowen, 12, Collins Street, Melbourne, C.I.

South Australia: Dr. E. Britten Jones, 175, North Terrace, Adelaide.

Queensland: Dr. Eustace Russell, Wickham Terrace, Brisbane.

Western Australia: Dr. Bruce Hunt, 205, St. George's Terrace, Perth.

Tasmania: Dr. James Sprent, 148, Macquarie Street, Hobart.

Examinations will be held in New Zealand in one or more of the larger cities, at approximately the same times. The dates and places of these examinations will shortly be announced by Professor D. W. Carmalt-Jones, Otago University, Dunedin, who is one of the vice-presidents of the college, and from whom further particulars may be obtained by intending candidates in the Dominion.

Correspondence.

NATIONAL HEALTH INSURANCE.

SIR: The proposed Australian bill seems likely to be based on the British act. A closer knowledge of working conditions of English panel practice would change the apparent complacency of Australian medical men to a sharp anxiety. It is significant that doctors with personal experience of British panel conditions are the most keenly disturbed.

The daily Press has stated that British Medical Association representatives have agreed on an upper wage limit of £365 and an annual medical fee of 11s. per insured person. Unless the Australian act includes compensating adjustments in other sections, these figures are disturbing.

In Britain the upper wage limit is £250 and the annual payment 9s. per insured person. Even this figure is considered too low by many medical men. A lift to £365 in wage limit is due presumably to the fact that Australia is a higher-wage country, with a currency depreciated 25% on sterling. If this is so, should not the same reasoning be reflected in the annual fees payable? Nine shillings sterling is worth more than 11s. Australian. In addition, Australian practice expenses, such as instruments, drugs, dressings, anaesthetics, car, petrol, wages paid to employees *et cetera*, are much heavier than in England.

Britain is a densely populated country of small mileages and numerous cities. In panel practice a seriously ill patient is sent off to a city or voluntary hospital, and so not treated by his doctor. In the same way the panel doctor rarely treats fractures. These transfers considerably lessen his work and responsibilities. In Australia the general practitioner treats a far higher ratio of such severe cases.

Compulsory increase in certification is unbelievable until experienced. It takes up much working time and is increased by officialdom "requiring further information".

Withholding of fees for various causes occurs. Every doctor has a few dissatisfied patients, and complaints from these are liable at any time to result in the withholding of medical fees due. "Over-prescribing" is another reason for withholding of payments. The methods adopted to decide what constitutes "over-prescribing" cause friction.

Medical practitioners sit on certain subcommittees; but fines are imposed on doctors even though the medical members of the subcommittee dissent (*vide The British Medical Journal*, February 12, 1938, Supplement, page 87; fine: £25).

Private fees also may suffer. In England, in most large practices, the private fee is 2s. 6d. to 3s. 6d., including the almost inevitable bottle of medicine. If Australian doctors accept "working class" fees on the English basis, will a similar downward revision follow with private fees? Can it be prevented?

Mileage fees and conditions in English panel work would mean a calamitous time for the Australian country practitioner in a large district. If any patient in any place can call the doctor to visit him for practically nothing, much medical time will be wasted in unnecessary, unpayable calls to all corners of the practice. Delays would necessitate official complaints and explanations.

I have yet to meet an Australian practitioner with experience of the English system desiring to work under it in Australia. Such a wide gulf exists between Australian and English methods of practice that practical knowledge of each side is necessary to anybody whose duty is to steer our profession from the present system to the proposed insurance act. Can you please inform me whether the committee which deals with this matter includes in its personnel men with a personal working knowledge of the English system? If not, its ability to negotiate safely on behalf of the profession is seriously impaired. Has a systematic attempt been made to collect evidence and opinions from such practitioners or from Australian practitioners working in England?

Conclusions on the present negotiations are necessarily founded on unverified newspaper reports. The vast difference between Australian and British methods has been confirmed by my personal experience in each country. Possibly other medical men similarly placed may assist constructively by stating their views.

Yours, etc.,

F. T. B. LOVEGROVE.

Wongan Hills,
Western Australia,
April 27, 1938.

SIR: In your issue of April 16 there appears a paragraph on medical benefits in the national health insurance scheme, outlining proposals agreed to by the Federal Council.

The payment of insurance practitioners is, we learn, to be at the rate of eleven shillings per annum. Allowing for exchange and the difference in value between the two currencies, this is rather less than the 9s. per annum paid to insurance practitioners in Great Britain. Yet no one who reads the Supplement to *The British Medical Journal* can fail to be aware that the profession in Britain considers this sum to be hopelessly inadequate, or that the Association is definitely committed to a policy of raising the capitation fee. A fee of 15s. has been mentioned as a goal to aim at.

Even allowing, however, that the British capitation fee is just, it does not follow that Australian conditions of practice or standards of service warrant similar payment. British panel practice was based originally on figures obtained from the poorest club and contract practice. Australian lodger and medical fund patients are accustomed, especially in the country, to much more extended services, often including X rays and pathological work. In an average Australian practice, outside the main cities, the practitioner continues to carry on treatment when his patient

has been admitted to hospital, whereas the British practitioner sends many a patient with difficult, obscure or dangerous disease to one of the public hospitals or available specialist services. These differences deserve some recognition.

A concrete instance of the application of national insurance proposals can be found in one's own practice. Thirty-five shillings is at present the capitation fee in medical fund practice in the outer Western Australian goldfields. This figure covers treatment of dependants; but this again is compensated by the fact that most mining men are single and have no dependants. The effective capitation fee is probably not less than 20s. per insured person. It is easy to see what the new proposals will mean financially to those who struggle to maintain a medical service in the rigorous conditions of the far outback.

Even more unjust is the proposal relating to travelling expenses. Once again assuming the scheme to be applied here, I find that about half the population to be insured live at a township eighteen miles from me. At present, medical fund members at that centre receive regular visits twice weekly, running costs being defrayed from a special fund. Any member requiring a visit at other times pays personally for it.

Under the national scheme I will receive for each member a mileage payment equal to fifteen miles at 2s., namely, 30s. This must cover all visits made, and there is no restriction as to the number of visits, since the insurance doctor will be at the call of the insured person at all times, night or day.

Now the capitation fee of 11s. is presumably based on an actuarial calculation of either an average of two visits per annum at 5s. 6d. per member, or slightly over one visit at 10s. 6d. Assuming that the average is only one visit, a slight loss on travelling is nevertheless inevitable.

To explain: it is generally conceded that the running expenses of a car, including depreciation, are not less than eightpence per mile in this part of the world. A journey of thirty-six miles therefore costs 24s. Allowing a modest 10s. 6d. for an hour's time spent in travelling, it is obvious that a single visit costs 34s. 6d. and involves a loss of 4s. 6d. An influenza epidemic would speedily accomplish one's ruin.

It is plainly out of the question for many country practitioners to enter the scheme, and it is evident that our only line of action is to decline to be associated with it, notwithstanding the *imprimatur* of the Federal Council.

Yours, etc.,

T. M. GILBERT.

Cue,
Western Australia,
May 2, 1938.

THE INTERPRETATION OF MACLEAN'S UREA CONCENTRATION TEST IN ASSESSING RENAL FUNCTION IN PREGNANCY.

SIR: Dr. Hansman's letter, which appears in THE MEDICAL JOURNAL OF AUSTRALIA of April 30, 1938, has caused me so much surprise that I readily agree with his statement that there is obvious confusion of thought.

Dr. Hansman is at such pains to explain himself as to leave no doubt that the confusion of thought is on his part and not on mine. The task of demonstrating to him that this is so can scarcely be compassed in a letter. In any case it would be one of supererogation; for I would suggest that a more careful perusal of my papers would correct many misapprehensions. *Inter alia* there are comments of his on quoted statements of mine that completely ignore the context and are consequently quite pointless, and he even quotes in one place refutation of his criticism in another without noticing the fact. There is indeed scarcely one item of criticism in his two and a quarter columns that reference to the articles will not completely withstand, so that no additional refutation is necessary.

Dr. Hansman's criticism of the use of tests over two hours in the non-pregnant nephritic group does bring to

my attention that the acknowledgement at the end of the article is perhaps not sufficient to make it clear that the records, which were supplied by Dr. W. J. Penfold (Baker Research Institute), were the only records available to me in the group. It was unfortunate that the tests were performed over two hours only. The assessment of urea excreted over that period is, however, a reasonable procedure for purposes of comparison.

Dr. Hansman's description of an analysis of some limitations of a test of such importance and of a suggested means of throwing light on them, as an "attack" on that test, cannot be taken seriously.

Dr. Hansman's reference to the application of statistical methods as "statistical juggling" reveals a prejudice on which Topley and Wilson's comment is that "the result has been a quite unnecessary confusion, and the confusion is likely to persist as long as the need for such methods is ignored".

Yours, etc.,
VERA I. KRIEGER.

Biochemistry Department,
Melbourne University,
May 10, 1938.

Books Received.

THE COMPLEAT PEDIATRICIAN: PRACTICAL, DIAGNOSTIC, THERAPEUTIC AND PREVENTIVE PEDIATRICS, by W. C. Davison, M.A., D.Sc., M.D.; Second Edition, completely rewritten; 1938. Durham: Duke University Press. Royal 8vo, pp. 250. Price: \$3.75 net.

STUDIES ON THE PHYSIOLOGY OF THE MIDDLE EAR, by J. G. Byrne, M.A., M.D., LL.D.; 1938. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 304, with 54 illustrations. Price: 18s. net.

INTRODUCTION TO OPHTHALMOLOGY, by P. C. Kronfield, M.D.; 1938. Baltimore: C. C. Thomas. Medium 8vo, pp. 340, with illustrations. Price: \$3.50 net.

Diary for the Month.

- MAY 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 MAY 25.—Victorian Branch, B.M.A.: Council.
 MAY 26.—New South Wales Branch, B.M.A.: Branch.
 MAY 26.—South Australian Branch, B.M.A.: Branch.
 MAY 27.—Queensland Branch, B.M.A.: Council.
 JUNE 1.—Victorian Branch, B.M.A.: Branch.
 JUNE 1.—Western Australian Branch, B.M.A.: Council.
 JUNE 2.—South Australian Branch, B.M.A.: Council.
 JUNE 3.—Queensland Branch, B.M.A.: Branch.
 JUNE 7.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 JUNE 10.—Queensland Branch, B.M.A.: Council.
 JUNE 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 JUNE 15.—Western Australian Branch, B.M.A.: Branch.
 JUNE 21.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xviii-xx.

- FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA: Medical Superintendent.
 LORD HOWE ISLAND BOARD OF CONTROL: Medical Officer.
 PUBLIC SERVICE BOARD, ADELAIDE, SOUTH AUSTRALIA: Senior Laboratory Assistant.
 RENWICK HOSPITAL FOR INFANTS, SUMMER HILL, NEW SOUTH WALES: Honorary Officers.
 SAINT VINCENT'S HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Dermatologists.
 THE UNIVERSITY OF SYDNEY, NEW SOUTH WALES: Lecture ship in Pathology.
 VICTORIAN EYE AND EAR HOSPITAL, MELBOURNE, VICTORIA: Resident Surgeons.
 WOMEN'S HOSPITAL, MELBOURNE, VICTORIA: Pathologist.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.

Editorial Notices.

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